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Nadas et al.

(54) **INTERFACE SYSTEM FOR DISPLAYING COMPREHENSIVE PATIENT MEDICATION RECORD**

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Publication Classification

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G06Q 50/00 (2006.01)

(52) **U.S. Cl.** **705/3**

(57) **ABSTRACT**

A comprehensive medication management system is disclosed. The comprehensive medication management system offers a number of compliance related services that may be offered to patients in to improve medication therapy compliance. The system identifies compliance barriers facing individual patents and recommends services designed to overcome those barriers. The system further provides feedback to patients to document their progress. The system proactively identifies patients who may benefit from compliance services and blocks their transactions until the services are explained. The point of sale block may be expanded to other classes of patients so that the transactions of other classes of patients blocked and other messages delivered or some other customized interactions carried out. The medication management system may serve as a central repository of information about a patient's medication treatment program and the medication management system may provide quick and easy access to a patient's entire medication history to facilitate consultations between a pharmacist and the patient. The medication management system may generate lists of tasks for pharmacists to perform in order to deliver the compliance related services to individual patients.

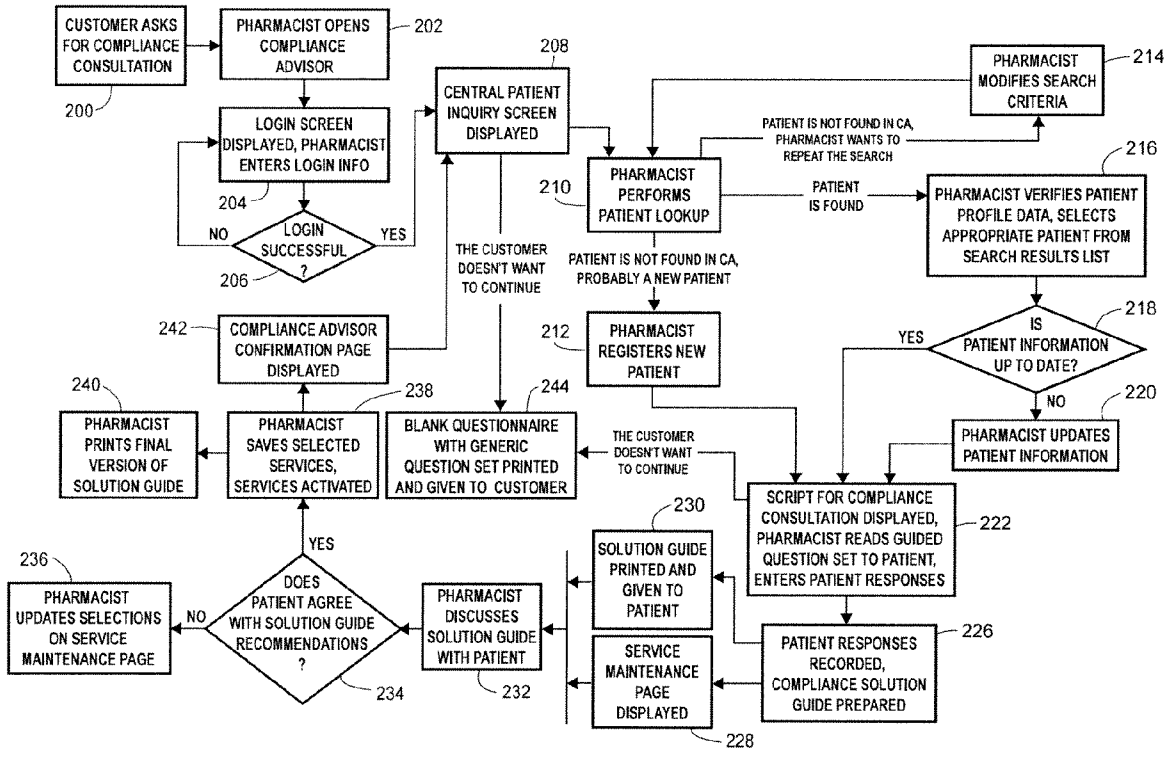


FIG. 1

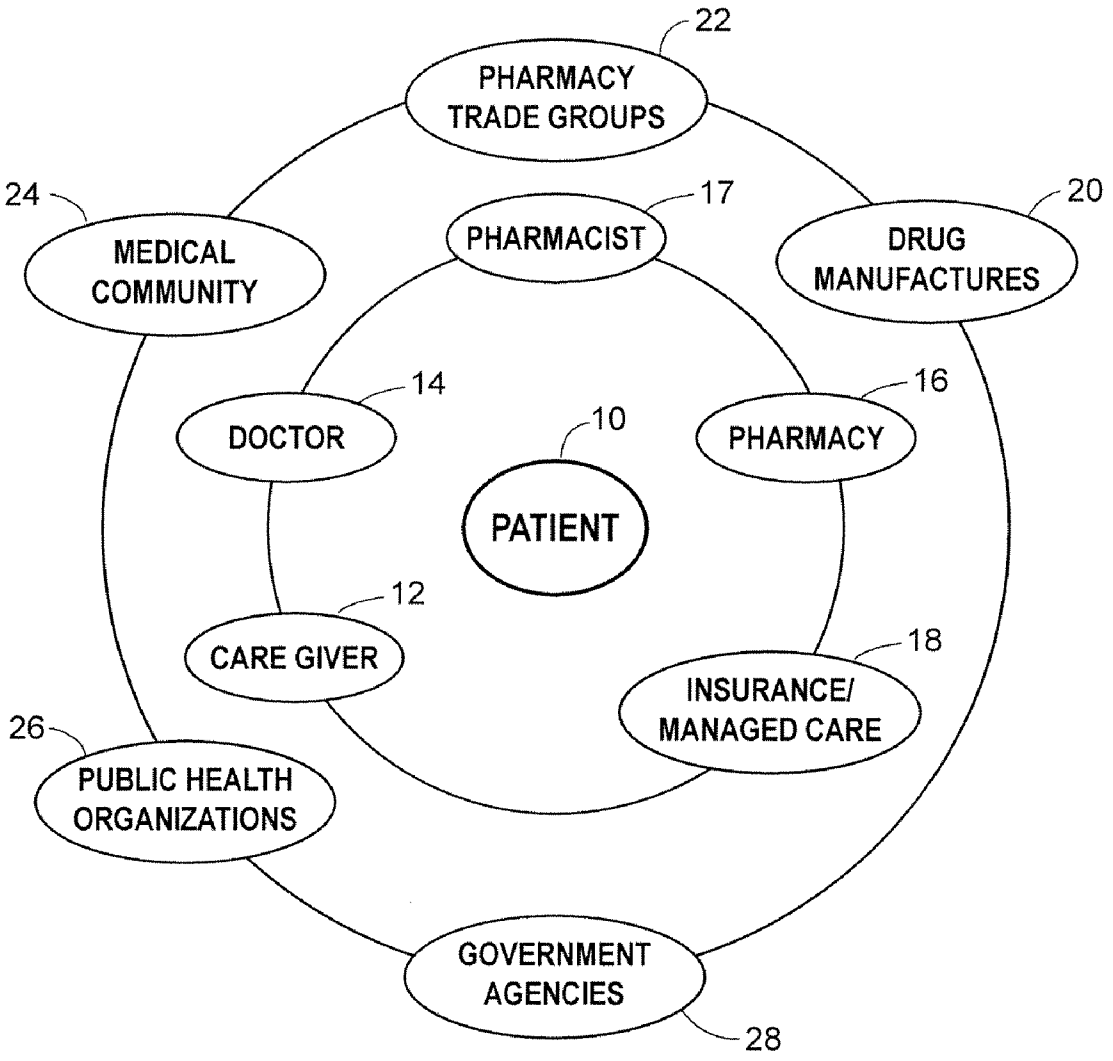

22
PHARMACY TRADE GROUPS
24
MEDICAL COMMUNITY
17
PHARMACIST
20
DRUG MANUFACTURES
14
DOCTOR
16
PHARMACY
10
PATIENT
12
CARE GIVER
18
INSURANCE/ MANAGED CARE
26
PUBLIC HEALTH ORGANIZATIONS
GOVERNMENT AGENCIES
28

FIG. 2

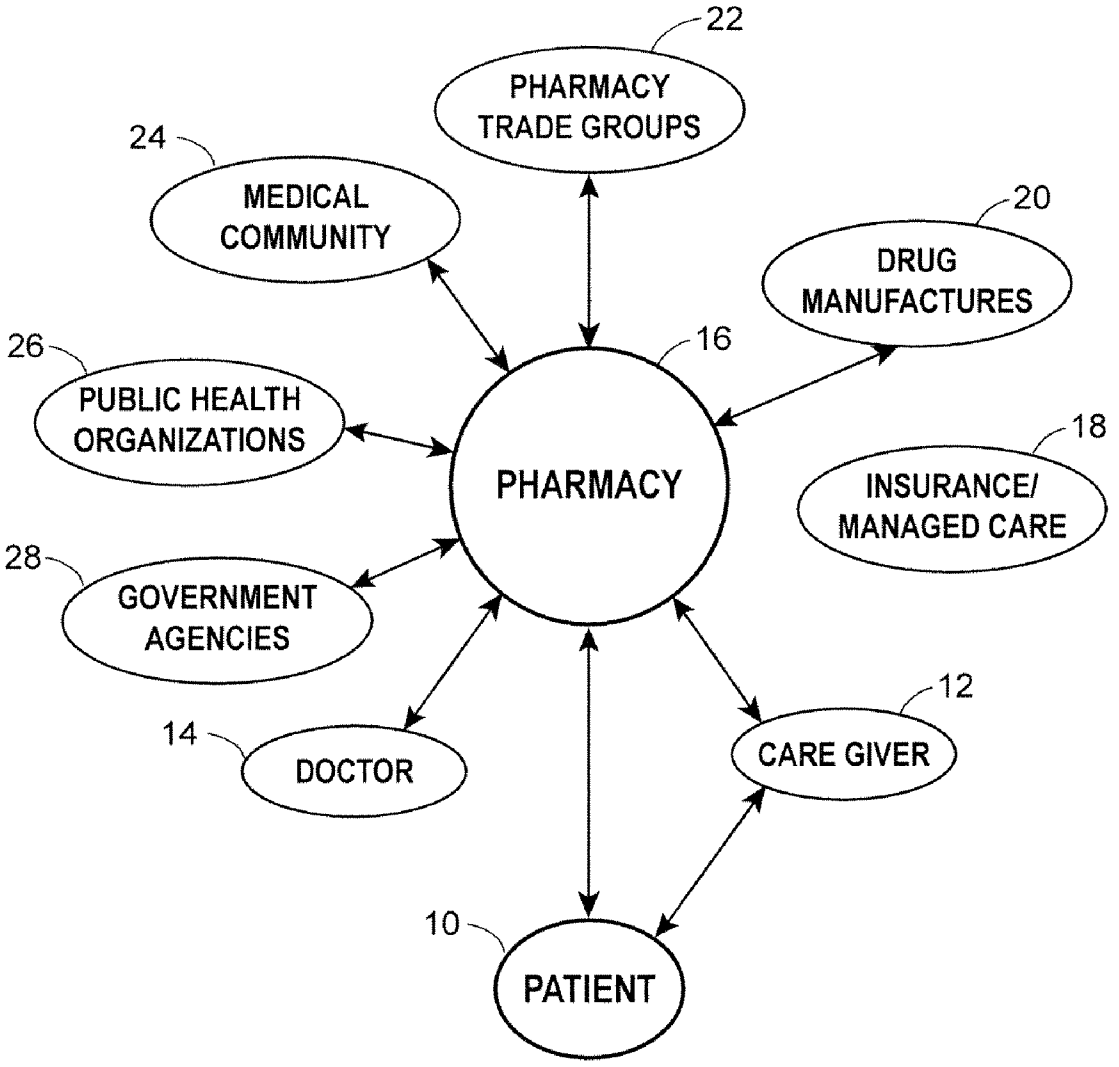

22
PHARMACY TRADE GROUPS
24
MEDICAL COMMUNITY
20
DRUG MANUFACTURES
26
PUBLIC HEALTH ORGANIZATIONS
16
PHARMACY
18
INSURANCE/ MANAGED CARE
28
GOVERNMENT AGENCIES
12
CARE GIVER
14
DOCTOR
10
PATIENT

FIG. 3

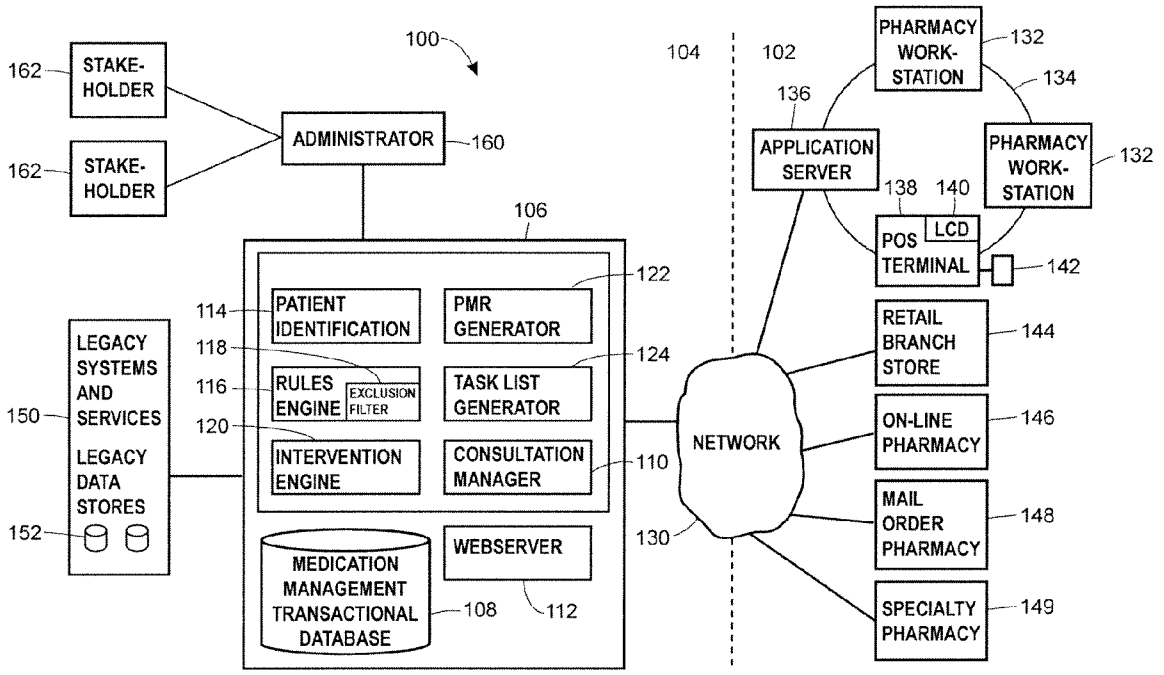

100
104
102
162
STAKE-HOLDER
162
STAKE-HOLDER
ADMINISTRATOR
160
106
PHARMACY WORK-STATION
132
134
136
APPLICATION SERVER
PHARMACY WORK-STATION
132
138
140
POS TERMINAL
LCD
142
122
114
PATIENT IDENTIFICATION
PMR GENERATOR
118
124
116
RULES ENGINE
EXCLUSION FILTER
TASK LIST GENERATOR
120
INTERVENTION ENGINE
CONSULTATION MANAGER
110
LEGACY SYSTEMS AND SERVICES
150
LEGACY DATA STORES
152
NETWORK
130
MEDICATION MANAGEMENT TRANSACTIONAL DATABASE
108
WEBSERVER
112
RETAIL BRANCH STORE
144
ON-LINE PHARMACY
146
MAIL ORDER PHARMACY
148
SPECIALTY PHARMACY
149

FIG. 4

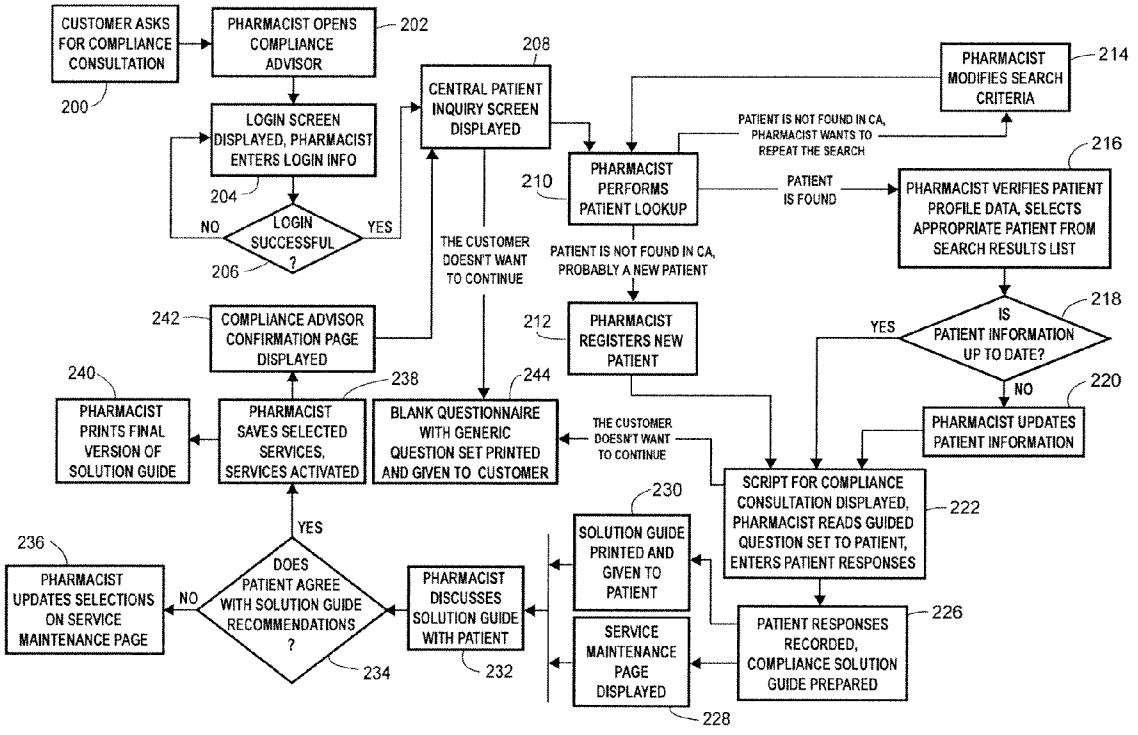

CUSTOMER ASKS FOR COMPLIANCE CONSULTATION
200
PHARMACIST OPENS COMPLIANCE ADVISOR
202
LOGIN SCREEN DISPLAYED, PHARMACIST ENTERS LOGIN INFO
204
LOGIN SUCCESSFUL ?
206
NO
YES
CENTRAL PATIENT INQUIRY SCREEN DISPLAYED
208
PHARMACIST PERFORMS PATIENT LOOKUP
210
PATIENT IS NOT FOUND IN CA, PHARMACIST WANTS TO REPEAT THE SEARCH
PATIENT IS FOUND
PHARMACIST MODIFIES SEARCH CRITERIA
214
PHARMACIST VERIFIES PATIENT PROFILE DATA, SELECTS APPROPRIATE PATIENT FROM SEARCH RESULTS LIST
216
PATIENT IS NOT FOUND IN CA, PROBABLY A NEW PATIENT
THE CUSTOMER DOESN'T WANT TO CONTINUE
IS PATIENT INFORMATION UP TO DATE?
218
YES
NO
PHARMACIST UPDATES PATIENT INFORMATION
220
PHARMACIST REGISTERS NEW PATIENT
212
COMPLIANCE ADVISOR CONFIRMATION PAGE DISPLAYED
242
PHARMACIST PRINTS FINAL VERSION OF SOLUTION GUIDE
240
PHARMACIST SAVES SELECTED SERVICES, SERVICES ACTIVATED
238
BLANK QUESTIONNAIRE WITH GENERIC QUESTION SET PRINTED AND GIVEN TO CUSTOMER
244
THE CUSTOMER DOESN'T WANT TO CONTINUE
SCRIPT FOR COMPLIANCE CONSULTATION DISPLAYED, PHARMACIST READS GUIDED QUESTION SET TO PATIENT, ENTERS PATIENT RESPONSES
222
SOLUTION GUIDE PRINTED AND GIVEN TO PATIENT
230
PATIENT RESPONSES RECORDED, COMPLIANCE SOLUTION GUIDE PREPARED
226
SERVICE MAINTENANCE PAGE DISPLAYED
228
PHARMACIST DISCUSSES SOLUTION GUIDE WITH PATIENT
232
DOES PATIENT AGREE WITH SOLUTION GUIDE RECOMMENDATIONS ?
234
YES
NO
PHARMACIST UPDATES SELECTIONS ON SERVICE MAINTENANCE PAGE
236

FIG. 5

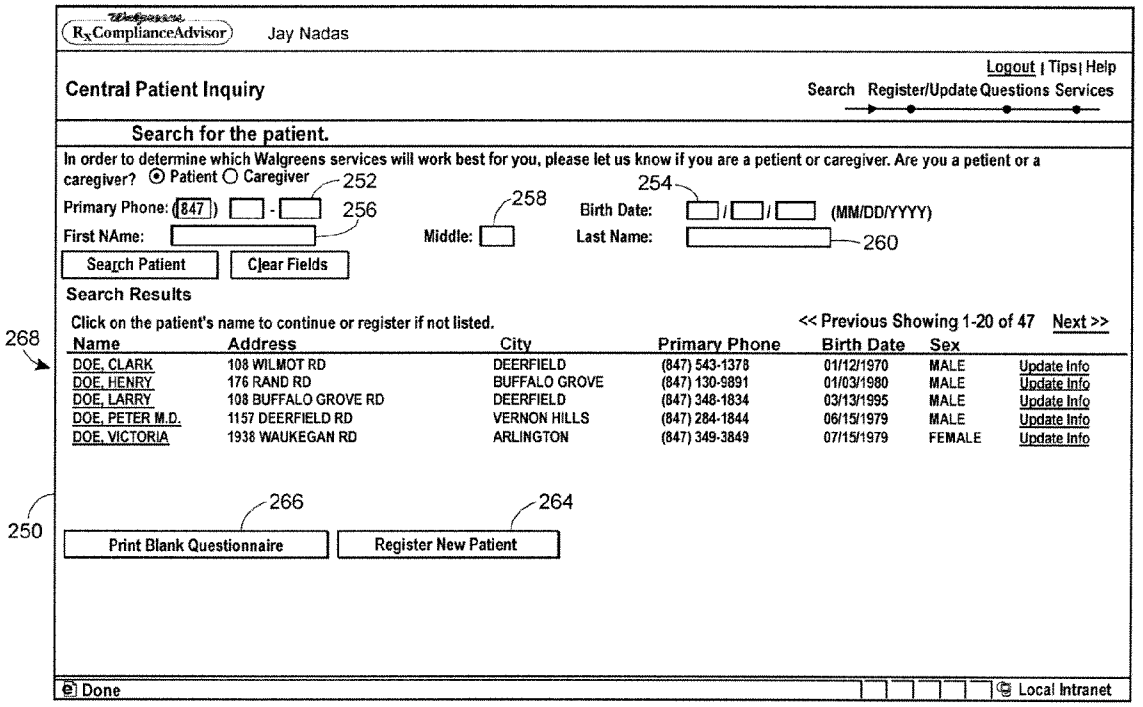

Walgreens RxComplianceAdvisor
Jay Nadas
Logout | Tips | Help
Central Patient Inquiry
Search Register/Update Questions Services
Search for the patient.
In order to determine which Walgreens services will work best for you, please let us know if you are a petient or caregiver. Are you a petient or a caregiver? Patient Caregiver
252
Primary Phone: (847) - 256
258
254
Birth Date: / / (MM/DD/YYYY)
First NAme:
Middle:
Last Name:
260
Search Patient
Clear Fields
Search Results
Click on the patient's name to continue or register if not listed.
<< Previous Showing 1-20 of 47 Next >>
268
Name | Address | City | Primary Phone | Birth Date | Sex
DOE, CLARK | 108 WILMOT RD | DEERFIELD | (847) 543-1378 | 01/12/1970 | MALE | Update Info
DOE, HENRY | 176 RAND RD | BUFFALO GROVE | (847) 130-9891 | 01/03/1980 | MALE | Update Info
DOE, LARRY | 108 BUFFALO GROVE RD | DEERFIELD | (847) 348-1834 | 03/13/1995 | MALE | Update Info
DOE, PETER M.D. | 1157 DEERFIELD RD | VERNON HILLS | (847) 284-1844 | 06/15/1979 | MALE | Update Info
DOE, VICTORIA | 1938 WAUKEGAN RD | ARLINGTON | (847) 349-3849 | 07/15/1979 | FEMALE | Update Info
250
266
264
Print Blank Questionnaire
Register New Patient
Done
Local Intranet

FIG. 6

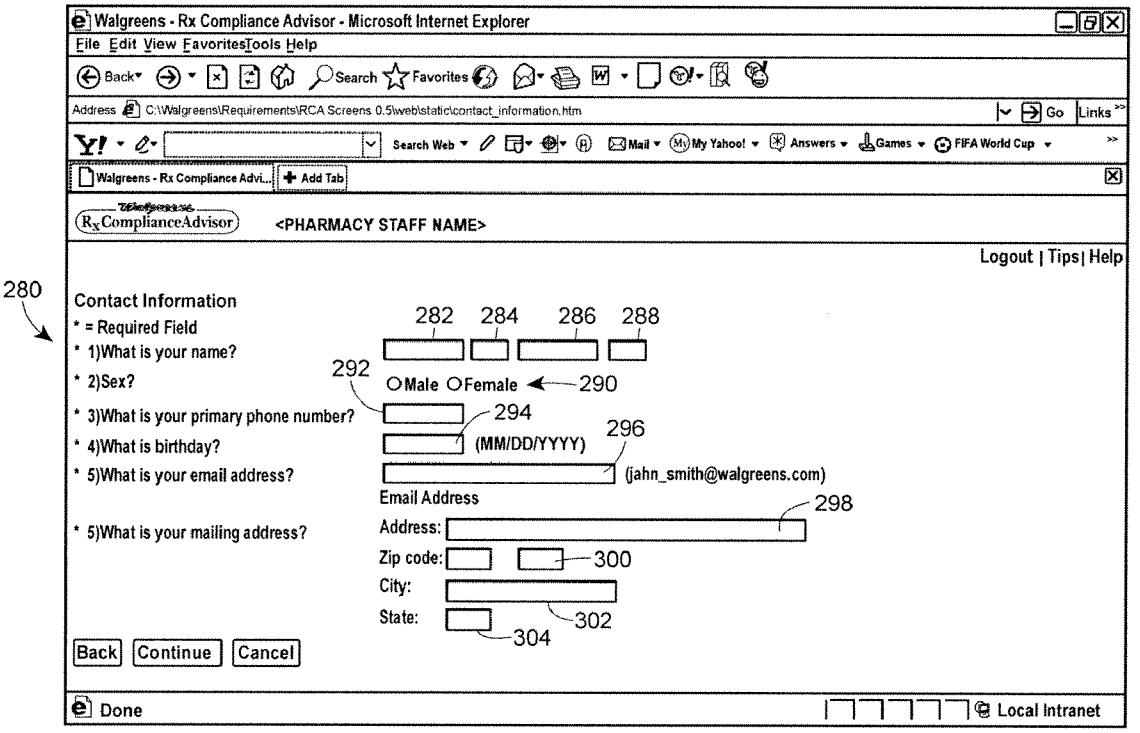

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address C:\Walgreens\Requirements\RCA Screens 0.5\web\static\contact_information.htm
Go Links
Search Web Mail My Yahoo! Answers Games FIFA World Cup
Walgreens - Rx Compliance Advi... Add Tab
Rx ComplianceAdvisor
<PHARMACY STAFF NAME>
Logout | Tips | Help
280
Contact Information
* = Required Field
* 1)What is your name?
* 2)Sex?
* 3)What is your primary phone number?
* 4)What is birthday?
* 5)What is your email address?
* 5)What is your mailing address?
282
284
286
288
292
Male Female
290
294
(MM/DD/YYYY)
296
(jahn_smith@walgreens.com)
Email Address
298
Address:
Zip code:
300
City:
State:
302
304
Back
Continue
Cancel
Done
Local Intranet

FIG. 7

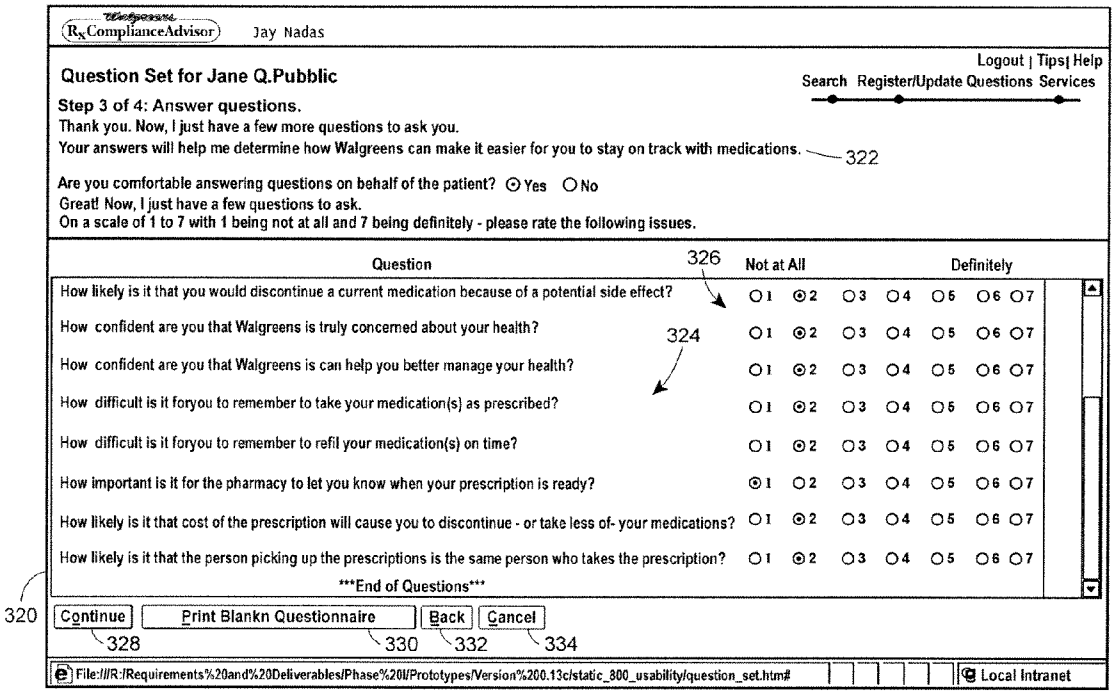

Walgreens RxComplianceAdvisor
Jay Nadas
Logout | Tips| Help
Question Set for Jane Q.Pubblic
Search Register/Update Questions Services
Step 3 of 4: Answer questions.
Thank you. Now, I just have a few more questions to ask you.
Your answers will help me determine how Walgreens can make it easier for you to stay on track with medications.
322
Are you comfortable answering questions on behalf of the patient? Yes No
Great! Now, I just have a few questions to ask.
On a scale of 1 to 7 with 1 being not at all and 7 being definitely - please rate the following issues.
Question
326
Not at All
Definitely
How likely is it that you would discontinue a current medication because of a potential side effect?
How confident are you that Walgreens is truly concerned about your health?
324
How confident are you that Walgreens is can help you better manage your health?
How difficult is it foryou to remember to take your medication(s) as prescribed?
How difficult is it foryou to remember to refil your medication(s) on time?
How important is it for the pharmacy to let you know when your prescription is ready?
How likely is it that cost of the prescription will cause you to discontinue - or take less of- your medications?
How likely is it that the person picking up the prescriptions is the same person who takes the prescription?
End of Questions
320
Continue
Print Blankn Questionnaire
Back
Cancel
328
330
332
334
File:///R:/Requirements%20and%20Deliverables/Phase%20II/Prototypes/Version%200.13c/static_800_usability/question_set.htm#
Local Intranet

FIG. 8

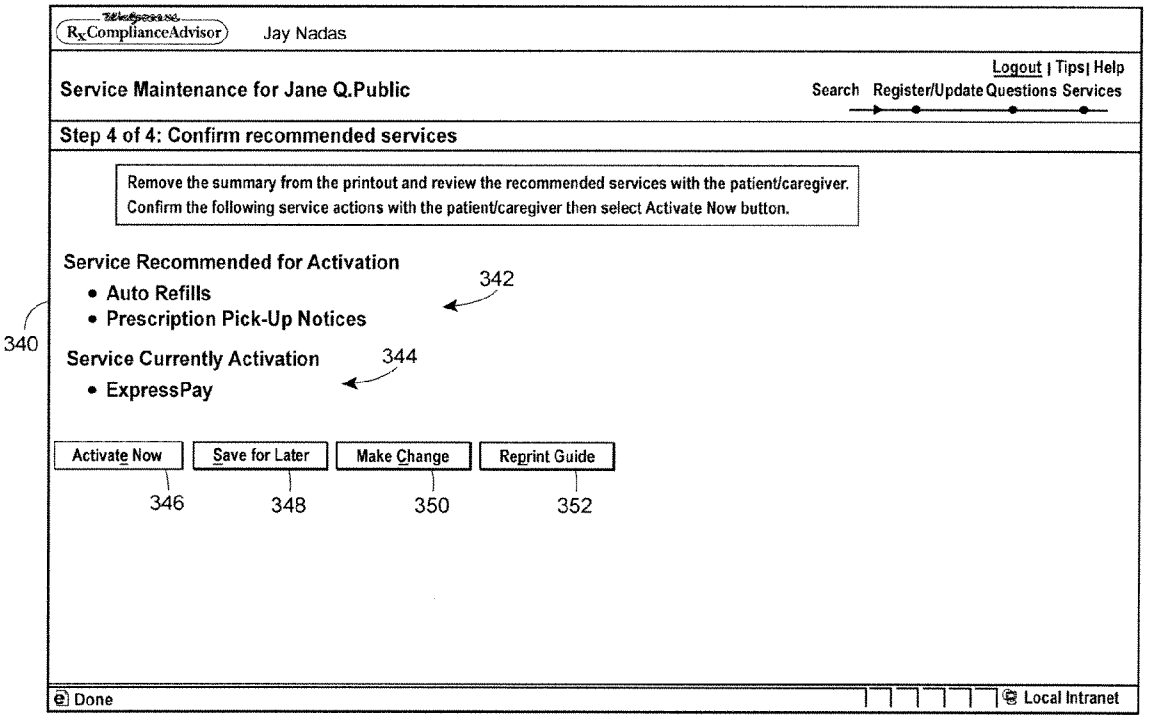

RxComplianceAdvisor
Jay Nadas
Logout | Tips | Help
Service Maintenance for Jane Q.Public
Search
Register/Update
Questions
Services
Step 4 of 4: Confirm recommended services
Remove the summary from the printout and review the recommended services with the patient/caregiver.
Confirm the following service actions with the patient/caregiver then select Activate Now button.
Service Recommended for Activation
342
• Auto Refills
• Prescription Pick-Up Notices
340
Service Currently Activation
344
• ExpressPay
Activate Now
Save for Later
Make Change
Reprint Guide
346
348
350
352
Done
Local Intranet

FIG. 9

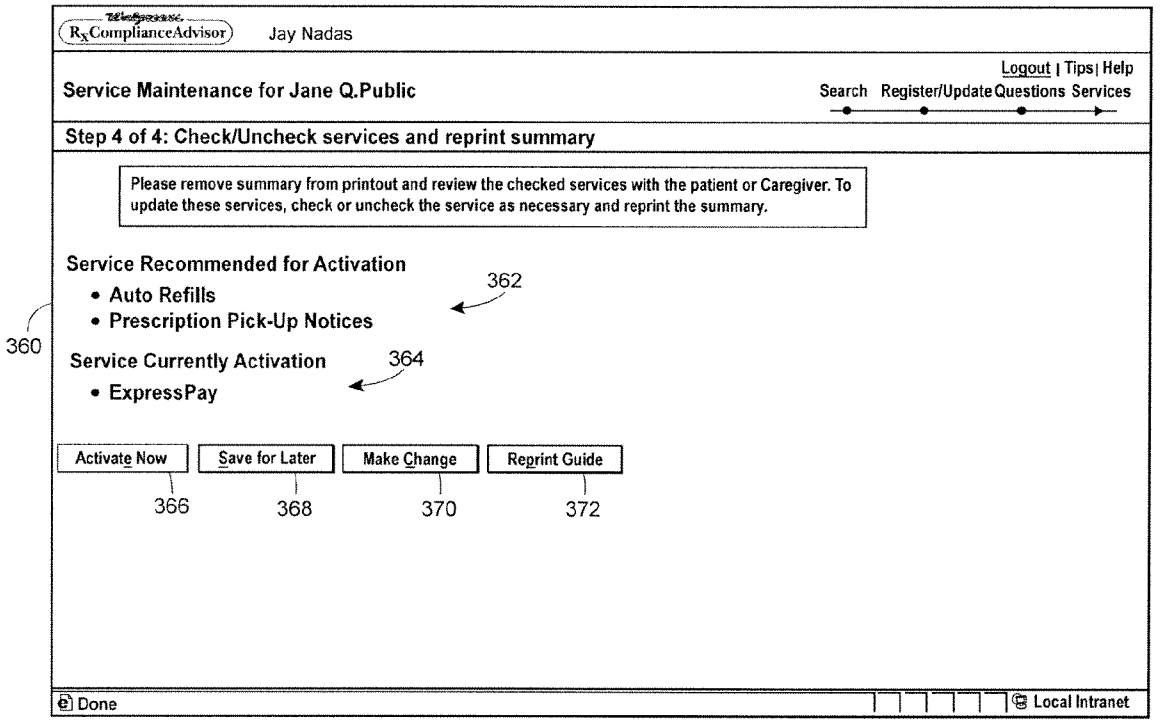

RxComplianceAdvisor
Jay Nadas
Logout | Tips | Help
Service Maintenance for Jane Q.Public
Search Register/Update Questions Services
Step 4 of 4: Check/Uncheck services and reprint summary
Please remove summary from printout and review the checked services with the patient or Caregiver. To update these services, check or uncheck the service as necessary and reprint the summary.
Service Recommended for Activation
• Auto Refills
• Prescription Pick-Up Notices
362
360
Service Currently Activation
364
• ExpressPay
Activate Now
Save for Later
Make Change
Reprint Guide
366
368
370
372
Done
Local Intranet

FIG. 10

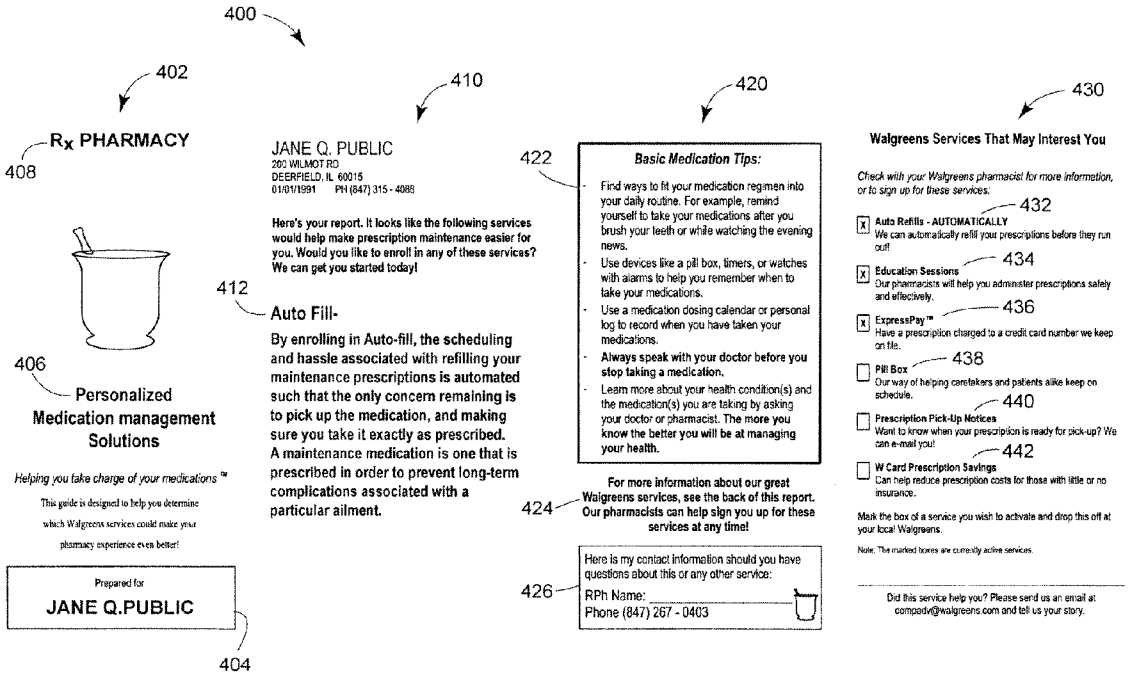

400
402
410
420
430
Rx PHARMACY
408
JANE Q. PUBLIC
200 WILMOT RD
DEERFIELD, IL 60015
01/01/1991 PH (847) 315 - 4088
Here's your report. It looks like the following services would help make prescription maintenance easier for you. Would you like to enroll in any of these services? We can get you started today!
422
Basic Medication Tips:
- Find ways to fit your medication regimen into your daily routine. For example, remind yourself to take your medications after you brush your teeth or while watching the evening news.
- Use devices like a pill box, timers, or watches with alarms to help you remember when to take your medications.
- Use a medication dosing calendar or personal log to record when you have taken your medications.
- Always speak with your doctor before you stop taking a medication.
- Learn more about your health condition(s) and the medication(s) you are taking by asking your doctor or pharmacist. The more you know the better you will be at managing your health.
Walgreens Services That May Interest You
Check with your Walgreens pharmacist for more information, or to sign up for these services.
432
[X] Auto Refills - AUTOMATICALLY
We can automatically refill your prescriptions before they run out!
434
[X] Education Sessions
Our pharmacists will help you administer prescriptions safely and effectively.
436
[X] ExpressPay™
Have a prescription charged to a credit card number we keep on file.
438
[ ] Pill Box
Our way of helping caretakers and patients alike keep on schedule.
440
[ ] Prescription Pick-Up Notices
Want to know when your prescription is ready for pick-up? We can e-mail you!
442
[ ] W Card Prescription Savings
Can help reduce prescription costs for those with little or no insurance.
Mark the box of a service you wish to activate and drop this off at your local Walgreens.
Note: The marked boxes are currently active services.
Did this service help you? Please send us an email at compadv@walgreens.com and tell us your story.
412
Auto Fill-
By enrolling in Auto-fill, the scheduling and hassle associated with refilling your maintenance prescriptions is automated such that the only concern remaining is to pick up the medication, and making sure you take it exactly as prescribed. A maintenance medication is one that is prescribed in order to prevent long-term complications associated with a particular ailment.
406
Personalized
Medication management
Solutions
Helping you take charge of your medications ™
This guide is designed to help you determine which Walgreens services could make your pharmacy experience even better!
Prepared for
JANE Q.PUBLIC
404
424
For more information about our great Walgreens services, see the back of this report. Our pharmacists can help sign you up for these services at any time!
426
Here is my contact information should you have questions about this or any other service:
RPh Name: _____
Phone (847) 267 - 0403

FIG. 11A

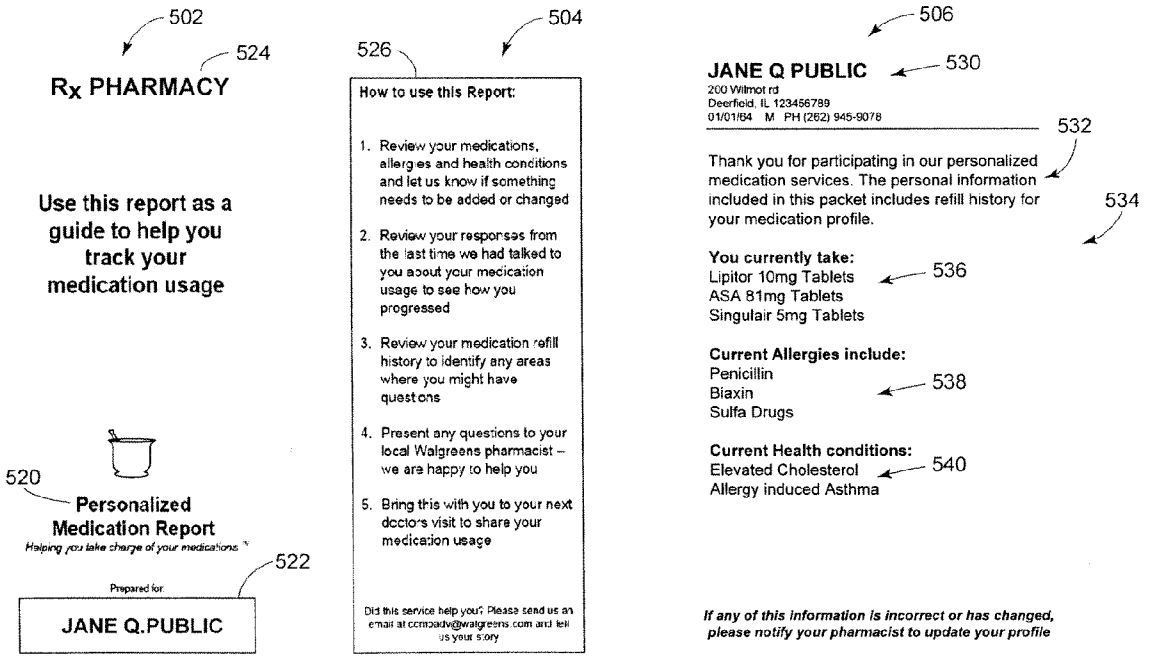

502
524
Rx PHARMACY
Use this report as a guide to help you track your medication usage
520
Personalized Medication Report
Helping you take charge of your medications
522
Prepared for
JANE Q.PUBLIC
504
526
How to use this Report:
1. Review your medications, allergies and health conditions and let us know if something needs to be added or changed
2. Review your responses from the last time we had talked to you about your medication usage to see how you progressed
3. Review your medication refill history to identify any areas where you might have questions
4. Present any questions to your local Walgreens pharmacist – we are happy to help you
5. Bring this with you to your next doctors visit to share your medication usage
Did this service help you? Please send us an email at ccmbadv@walgreens.com and tell us your story
506
JANE Q PUBLIC
530
200 Wilmot rd
Deerfield, IL 123456789
01/01/64 M PH (262) 945-9078
532
Thank you for participating in our personalized medication services. The personal information included in this packet includes refill history for your medication profile.
534
You currently take:
536
Lipitor 10mg Tablets
ASA 81mg Tablets
Singulair 5mg Tablets
Current Allergies include:
538
Penicillin
Biaxin
Sulfa Drugs
Current Health conditions:
540
Elevated Cholesterol
Allergy induced Asthma
If any of this information is incorrect or has changed, please notify your pharmacist to update your profile

FIG. 11B

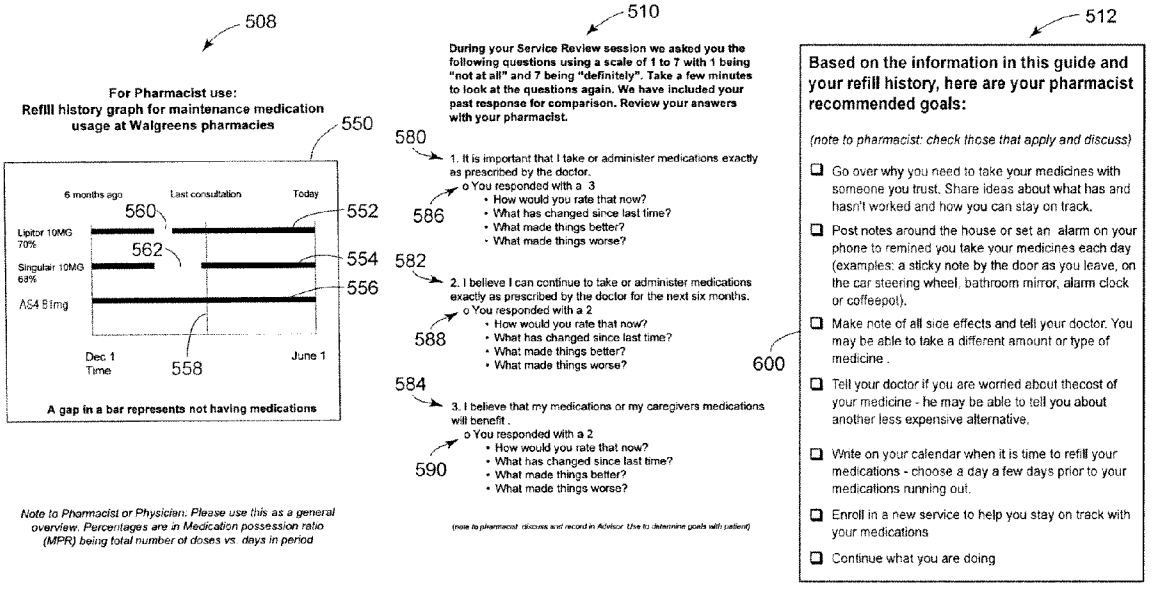

508
For Pharmacist use:
Refill history graph for maintenance medication usage at Walgreens pharmacies
550
6 months ago
Last consultation
Today
560
552
Lipitor 10MG 70%
562
554
Singulair 10MG 68%
556
AS4 81mg
Dec 1
Time
558
June 1
A gap in a bar represents not having medications
Note to Pharmacist or Physician: Please use this as a general overview. Percentages are in Medication possession ratio (MPR) being total number of doses vs. days in period
510
During your Service Review session we asked you the following questions using a scale of 1 to 7 with 1 being "not at all" and 7 being "definitely". Take a few minutes to look at the questions again. We have included your past response for comparison. Review your answers with your pharmacist.
580
1. It is important that I take or administer medications exactly as prescribed by the doctor.
o You responded with a 3
• How would you rate that now?
• What has changed since last time?
• What made things better?
• What made things worse?
586
582
2. I believe I can continue to take or administer medications exactly as prescribed by the doctor for the next six months.
o You responded with a 2
• How would you rate that now?
• What has changed since last time?
• What made things better?
• What made things worse?
588
584
3. I believe that my medications or my caregivers medications will benefit .
o You responded with a 2
• How would you rate that now?
• What has changed since last time?
• What made things better?
• What made things worse?
590
(note to pharmacist: discuss and record in Advisor. Use to determine goals with patient)
512
Based on the information in this guide and your refill history, here are your pharmacist recommended goals:
(note to pharmacist: check those that apply and discuss)
600
Go over why you need to take your medicines with someone you trust. Share ideas about what has and hasn't worked and how you can stay on track.
Post notes around the house or set an alarm on your phone to remined you take your medicines each day (examples: a sticky note by the door as you leave, on the car steering wheel, bathroom mirror, alarm clock or coffeepot).
Make note of all side effects and tell your doctor. You may be able to take a different amount or type of medicine .
Tell your doctor if you are worried about thecost of your medicine - he may be able to tell you about another less expensive alternative.
Write on your calendar when it is time to refill your medications - choose a day a few days prior to your medications running out.
Enroll in a new service to help you stay on track with your medications
Continue what you are doing

FIG. 11C

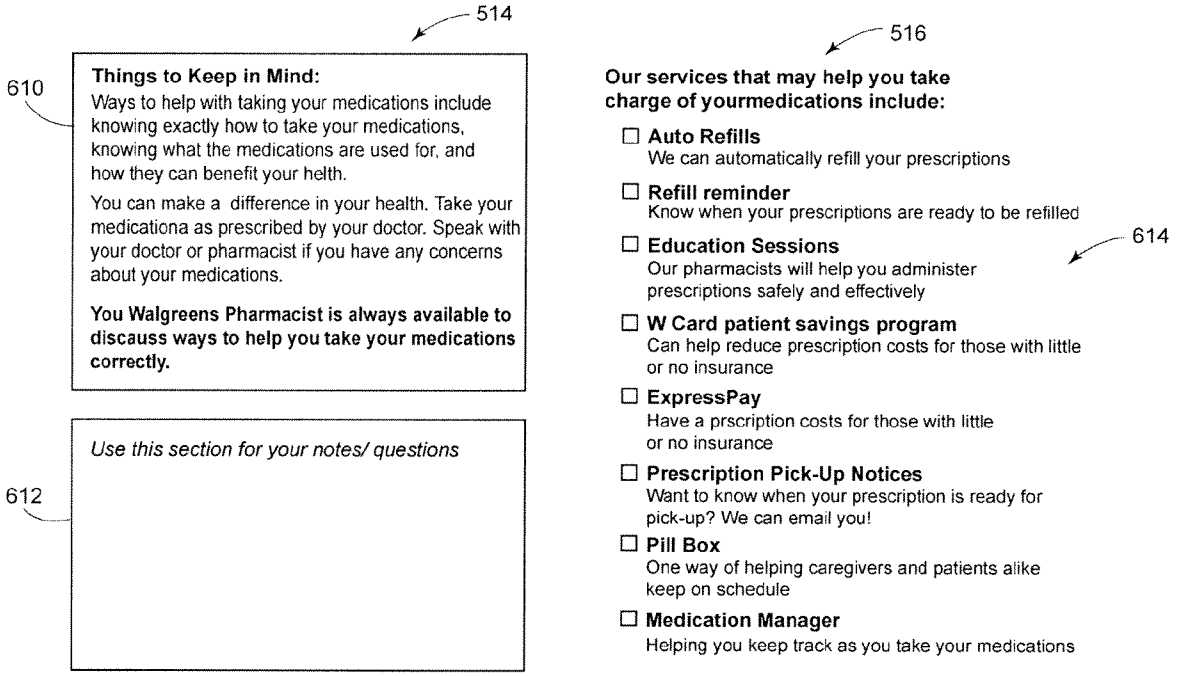

514
610
Things to Keep in Mind:
Ways to help with taking your medications include knowing exactly how to take your medications, knowing what the medications are used for, and how they can benefit your helth.
You can make a difference in your health. Take your medicationa as prescribed by your doctor. Speak with your doctor or pharmacist if you have any concerns about your medications.
You Walgreens Pharmacist is always available to discauss ways to help you take your medications correctly.
612
Use this section for your notes/ questions
516
Our services that may help you take charge of yourmedications include:
☐ Auto Refills
We can automatically refill your prescriptions
☐ Refill reminder
Know when your prescriptions are ready to be refilled
☐ Education Sessions
Our pharmacists will help you administer prescriptions safely and effectively
614
☐ W Card patient savings program
Can help reduce prescription costs for those with little or no insurance
☐ ExpressPay
Have a prscription costs for those with little or no insurance
☐ Prescription Pick-Up Notices
Want to know when your prescription is ready for pick-up? We can email you!
☐ Pill Box
One way of helping caregivers and patients alike keep on schedule
☐ Medication Manager
Helping you keep track as you take your medications

FIG. 12

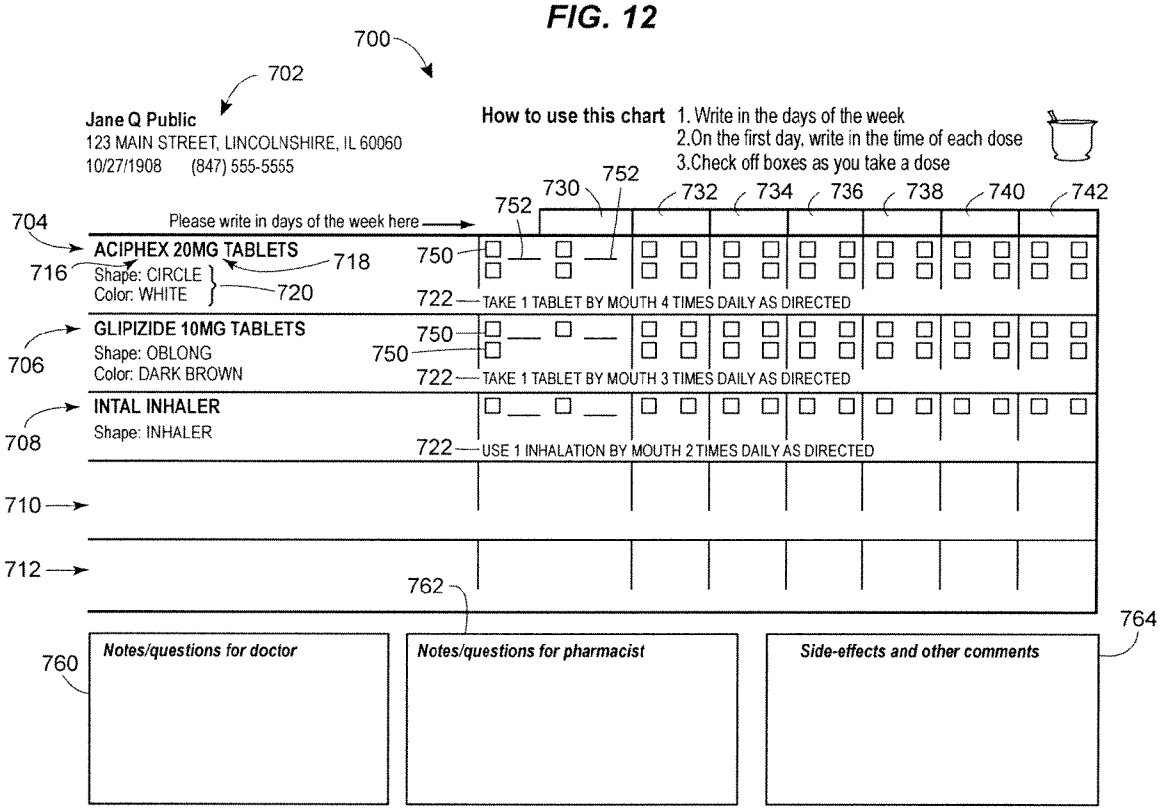

700
702
Jane Q Public
123 MAIN STREET, LINCOLNSHIRE, IL 60060
10/27/1908 (847) 555-5555
How to use this chart 1. Write in the days of the week
2.On the first day, write in the time of each dose
3.Check off boxes as you take a dose
730
752
752
732
734
736
738
740
742
704
Please write in days of the week here
ACIPHEX 20MG TABLETS
716
Shape: CIRCLE
Color: WHITE
718
720
750
722 TAKE 1 TABLET BY MOUTH 4 TIMES DAILY AS DIRECTED
706
GLIPIZIDE 10MG TABLETS
Shape: OBLONG
Color: DARK BROWN
750
750
722 TAKE 1 TABLET BY MOUTH 3 TIMES DAILY AS DIRECTED
708
INTAL INHALER
Shape: INHALER
722 USE 1 INHALATION BY MOUTH 2 TIMES DAILY AS DIRECTED
710
712
762
764
760
Notes/questions for doctor
Notes/questions for pharmacist
Side-effects and other comments

FIG. 13

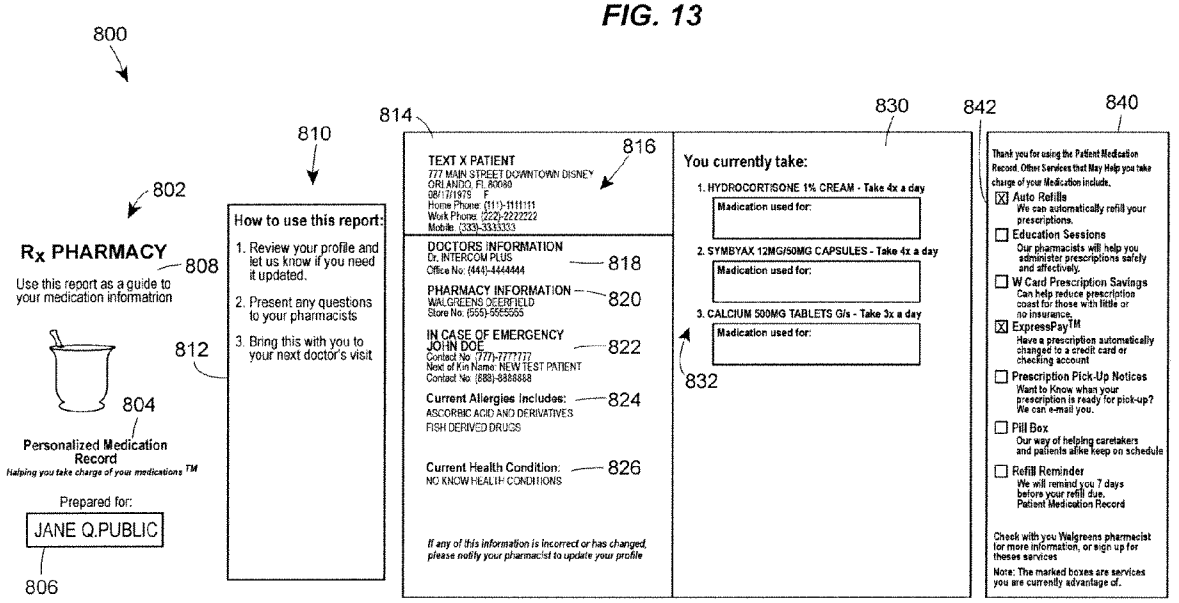

800
802
Rx PHARMACY
808
Use this report as a guide to your medication informatrion
804
Personalized Medication Record
Helping you take charge of your medications TM
Prepared for:
JANE Q.PUBLIC
806
810
How to use this report:
1. Review your profile and let us know if you need it updated.
2. Present any questions to your pharmacists
3. Bring this with you to your next doctor's visit
812
814
816
TEXT X PATIENT
777 MAIN STREET DOWNTOWN DISNEY
ORLANDO, FL 80089
08/17/1975 F
Home Phone: (111)-1111111
Work Phone: (222)-2222222
Mobile: (333)-3333333
DOCTORS INFORMATION
Dr. INTERCOM PLUS
Office No: (444)-4444444
818
PHARMACY INFORMATION
WALGREENS DEERFIELD
Store No. (555)-5555555
820
IN CASE OF EMERGENCY
JOHN DOE
Contact No: (777)-7777777
Next of Kin Name: NEW TEST PATIENT
Contact No: (888)-8888888
822
Current Allergies Includes:
ASCORBIC ACID AND DERIVATIVES
FISH DERIVED DRUGS
824
Current Health Condition:
NO KNOW HEALTH CONDITIONS
826
If any of this information is incorrect or has changed, please notify your pharmacist to update your profile
830
You currently take:
1. HYDROCORTISONE 1% CREAM - Take 4x a day
Madication used for:
2. SYMBYAX 12MG/50MG CAPSULES - Take 4x a day
Madication used for:
3. CALCIUM 500MG TABLETS G/s - Take 3x a day
Madication used for:
832
842
840
Thank you for using the Patient Medication Record. Other Services that May Help you take charge of your Medication include.
Auto Refills
We can automatically refill your prescriptions.
Education Sessions
Our pharmacists will help you administer prescriptions safely and affectively.
W Card Prescription Savings
Can help reduce prescription coast for those with little or no insurance.
ExpressPay™
Have a prescription automatically changed to a credit card or checking account
Prescription Pick-Up Notices
Want to Know when your prescription is ready for pick-up? We can e-mail you.
Pill Box
Our way of helping caretakers and patients alike keep on schedule
Refill Reminder
We will remind you 7 days before your refill due.
Patient Medication Record
Check with you Walgreens pharmacist for more information, or sign up for theses services
Note: The marked boxes are services you are currently advantage of.

FIG. 14

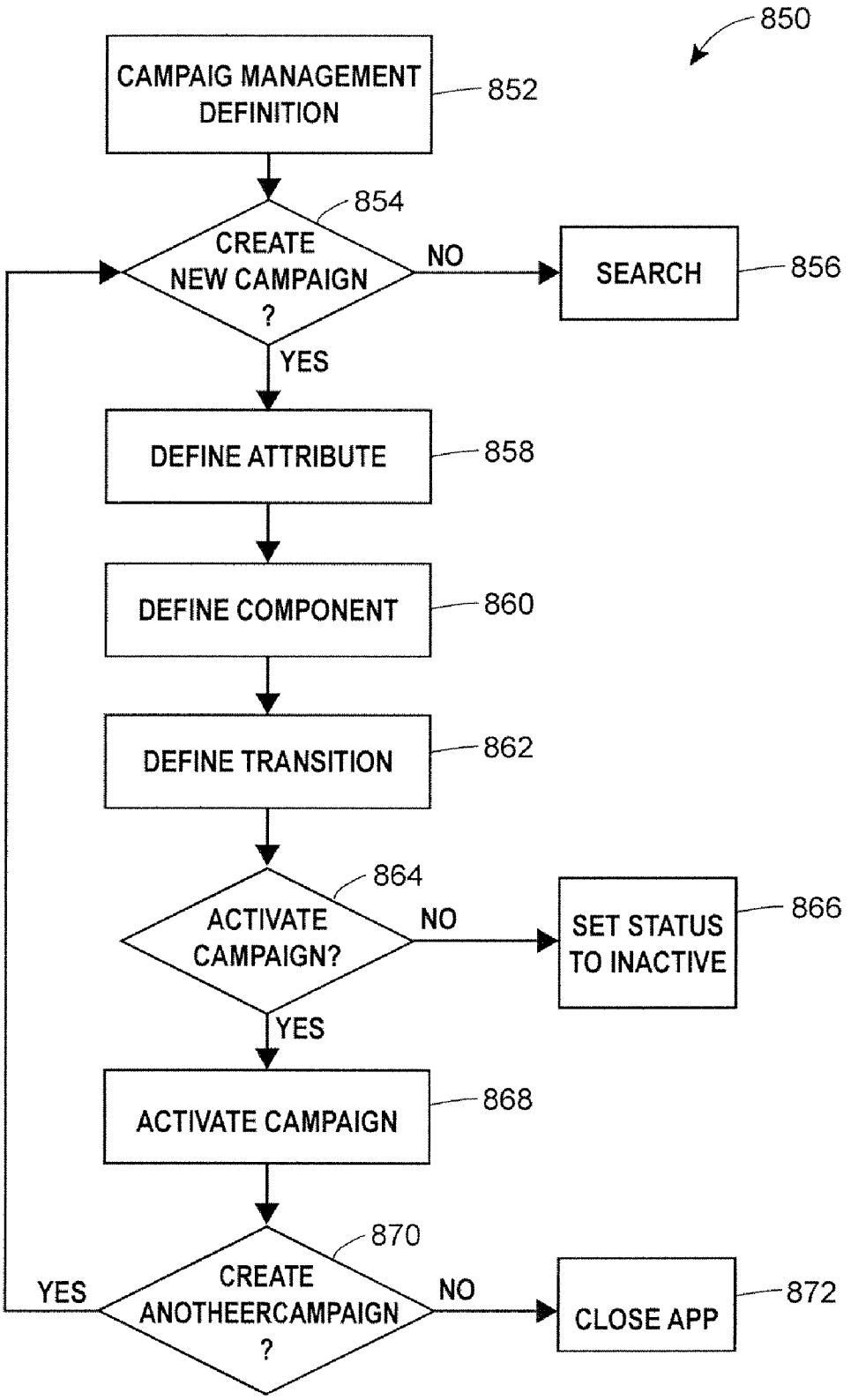

850
CAMPAIG MANAGEMENT DEFINITION
852
854
CREATE NEW CAMPAIGN ?
NO
SEARCH
856
YES
DEFINE ATTRIBUTE
858
DEFINE COMPONENT
860
DEFINE TRANSITION
862
864
ACTIVATE CAMPAIGN?
NO
SET STATUS TO INACTIVE
866
YES
ACTIVATE CAMPAIGN
868
870
YES
CREATE ANOTHEERCAMPAIGN ?
NO
CLOSE APP
872

FIG. 15

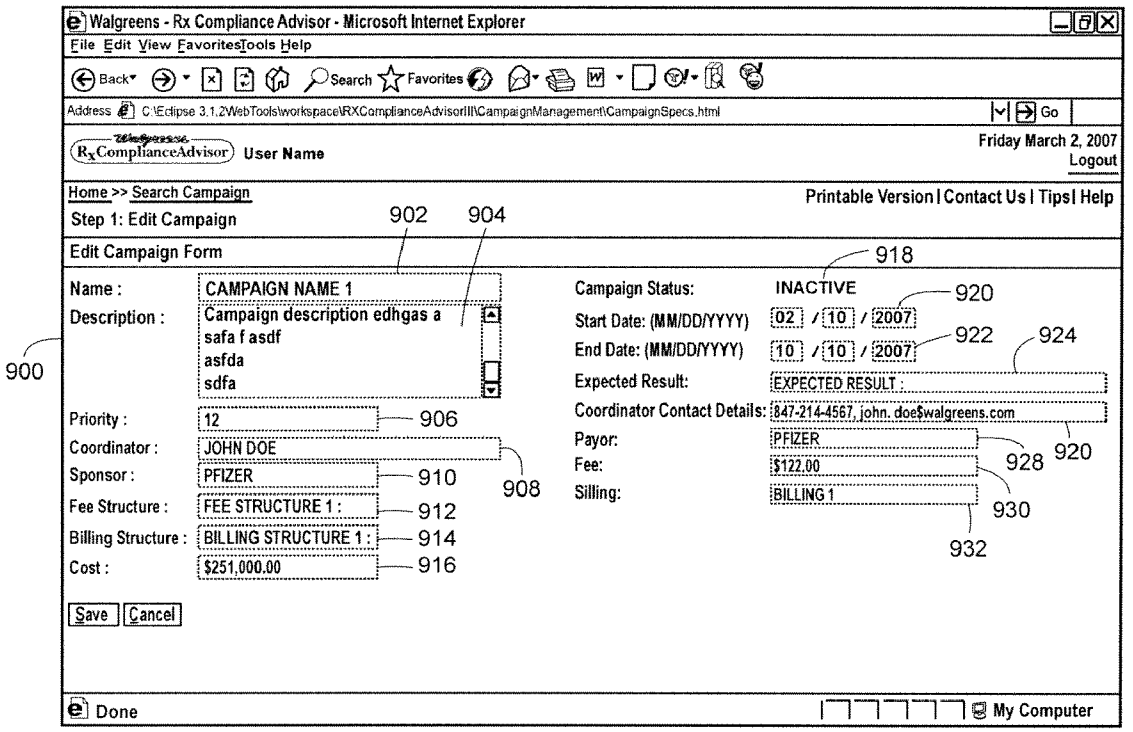

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address C:\Eclipse 3.1.2\WebTools\workspace\RXComplianceAdvisorIII\CampaignManagement\CampaignSpecs.html
Go
RxComplianceAdvisor
User Name
Friday March 2, 2007
Logout
Home >> Search Campaign
Printable Version | Contact Us | Tips | Help
Step 1: Edit Campaign
Edit Campaign Form
900
902
904
906
908
910
912
914
916
918
920
922
924
928
930
932
Name :
CAMPAIGN NAME 1
Description :
Campaign description edhgas a
safa f asdf
asfda
sdfa
Priority :
12
Coordinator :
JOHN DOE
Sponsor :
PFIZER
Fee Structure :
FEE STRUCTURE 1 :
Billing Structure :
BILLING STRUCTURE 1 :
Cost :
$251,000.00
Save
Cancel
Campaign Status:
INACTIVE
Start Date: (MM/DD/YYYY)
02 / 10 / 2007
End Date: (MM/DD/YYYY)
10 / 10 / 2007
Expected Result:
EXPECTED RESULT :
Coordinator Contact Details:
847-214-4567, john. doe$walgreens.com
Payor:
PFIZER
Fee:
$122.00
Silling:
BILLING 1
Done
My Computer

FIG. 16

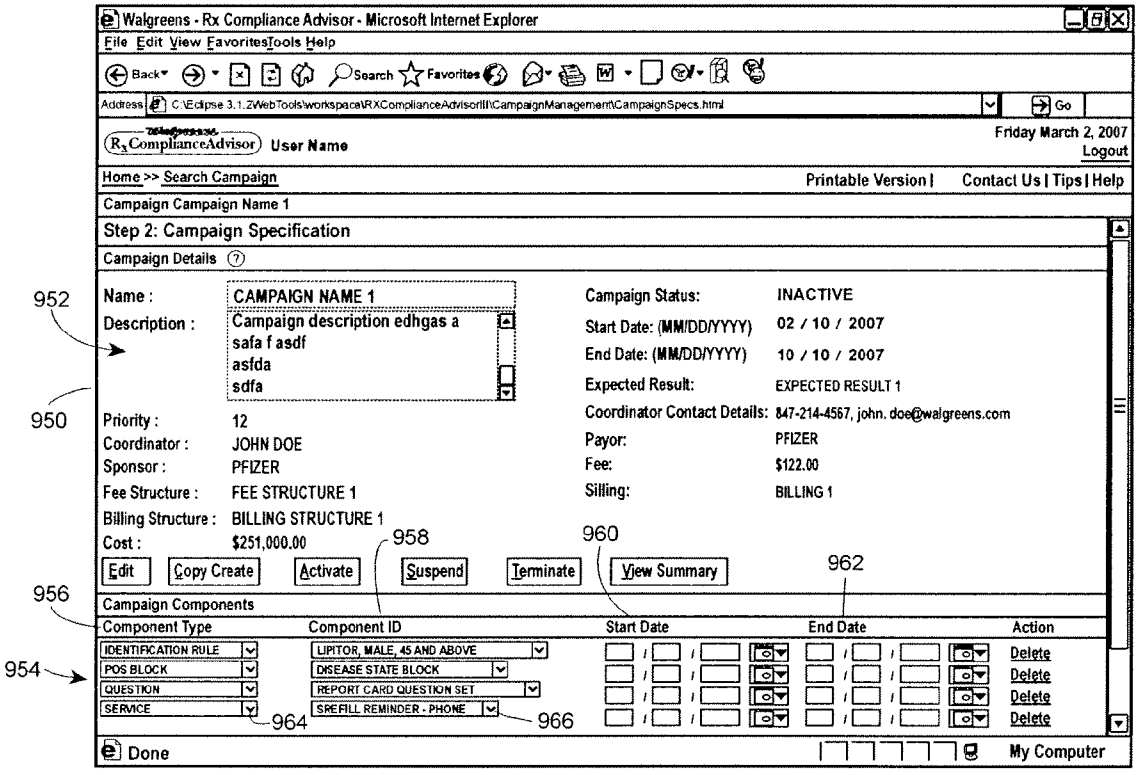

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address C:\Eclipse 3.1.2\WebTools\workspace\RXComplianceAdvisorIII\CampaignManagement\CampaignSpecs.html
Go
Rx ComplianceAdvisor User Name
Friday March 2, 2007
Logout
Home >> Search Campaign
Printable Version | Contact Us | Tips | Help
Campaign Campaign Name 1
Step 2: Campaign Specification
Campaign Details
952
Name : CAMPAIGN NAME 1
Description : Campaign description edhgas a safa f asdf asfda sdfa
950
Priority : 12
Coordinator : JOHN DOE
Sponsor : PFIZER
Fee Structure : FEE STRUCTURE 1
Billing Structure : BILLING STRUCTURE 1
Cost : $251,000.00
Campaign Status: INACTIVE
Start Date: (MM/DD/YYYY) 02 / 10 / 2007
End Date: (MM/DD/YYYY) 10 / 10 / 2007
Expected Result: EXPECTED RESULT 1
Coordinator Contact Details: 847-214-4567, john. doe@walgreens.com
Payor: PFIZER
Fee: $122.00
Silling: BILLING 1
958
960
962
Edit
Copy Create
Activate
Suspend
Terminate
View Summary
956
Campaign Components
Component Type
Component ID
Start Date
End Date
Action
954
IDENTIFICATION RULE
LIPITOR, MALE, 45 AND ABOVE
Delete
POS BLOCK
DISEASE STATE BLOCK
Delete
QUESTION
REPORT CARD QUESTION SET
Delete
SERVICE
964
SREFILL REMINDER - PHONE
966
Delete
Done
My Computer

FIG. 17

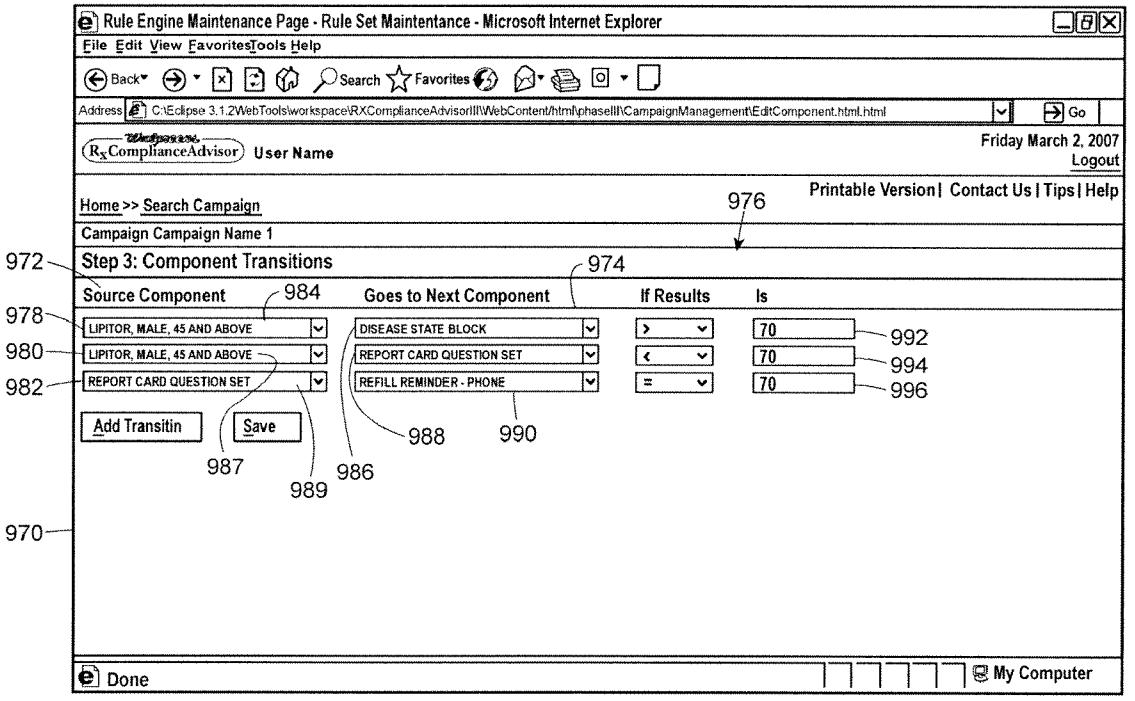

Rule Engine Maintenance Page - Rule Set Maintentance - Microsoft Internet Explorer
File Edit View FavoritesTools Help
Back Search Favorites
Address C:\Eclipse 3.1.2WebTools\workspace\RXComplianceAdvisorIII\WebContent\html\phaseIII\CampaignManagement\EditComponent.html.html
Go
RxComplianceAdvisor
User Name
Friday March 2, 2007
Logout
Home >> Search Campaign
Printable Version | Contact Us | Tips | Help
Campaign Campaign Name 1
Step 3: Component Transitions
Source Component
Goes to Next Component
If Results
Is
LIPITOR, MALE, 45 AND ABOVE
DISEASE STATE BLOCK
70
LIPITOR, MALE, 45 AND ABOVE
REPORT CARD QUESTION SET
70
REPORT CARD QUESTION SET
REFILL REMINDER - PHONE
70
Add Transitin
Save
Done
My Computer
970
972
974
976
978
980
982
984
986
987
988
989
990
992
994
996

FIG. 18

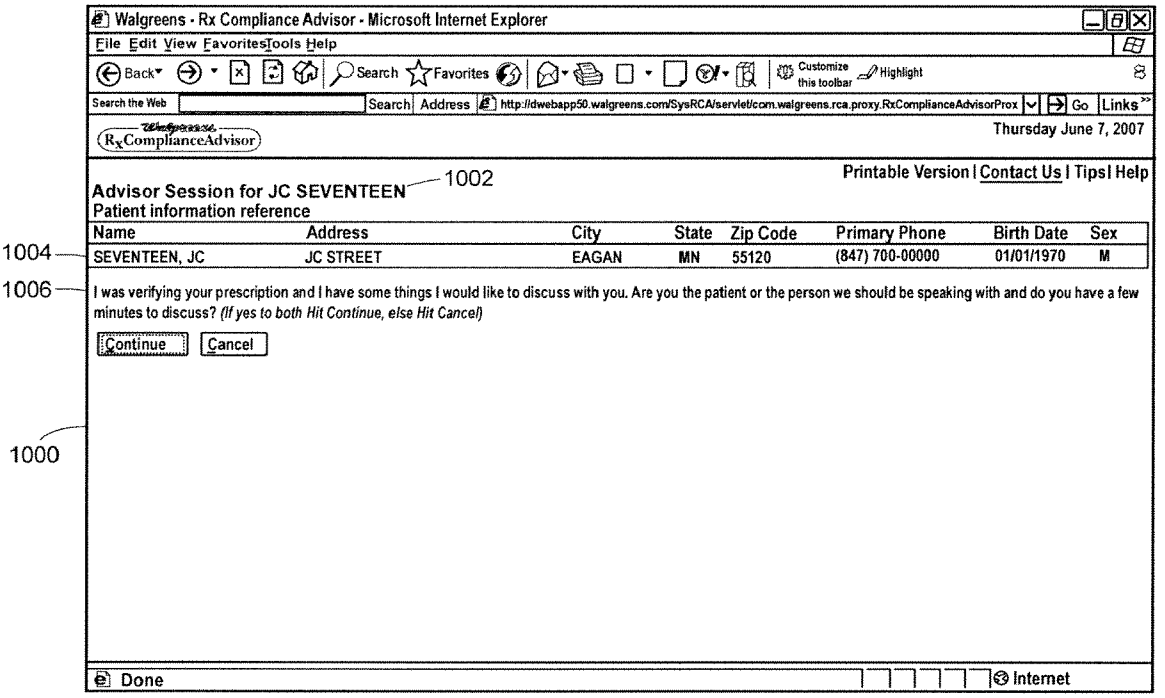

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Customize this toolbar Highlight
Search the Web Search Address http://dwebapp50.walgreens.com/SysRCA/servlet/com.walgreens.rca.proxy.RxComplianceAdvisorProx Go Links
Walgreens RxComplianceAdvisor
Thursday June 7, 2007
Printable Version | Contact Us | Tips | Help
Advisor Session for JC SEVENTEEN
1002
Patient information reference
Name Address City State Zip Code Primary Phone Birth Date Sex
1004
SEVENTEEN, JC JC STREET EAGAN MN 55120 (847) 700-00000 01/01/1970 M
1006
I was verifying your prescription and I have some things I would like to discuss with you. Are you the patient or the person we should be speaking with and do you have a few minutes to discuss? (If yes to both Hit Continue, else Hit Cancel)
Continue
Cancel
1000
Done
Internet

FIG. 19

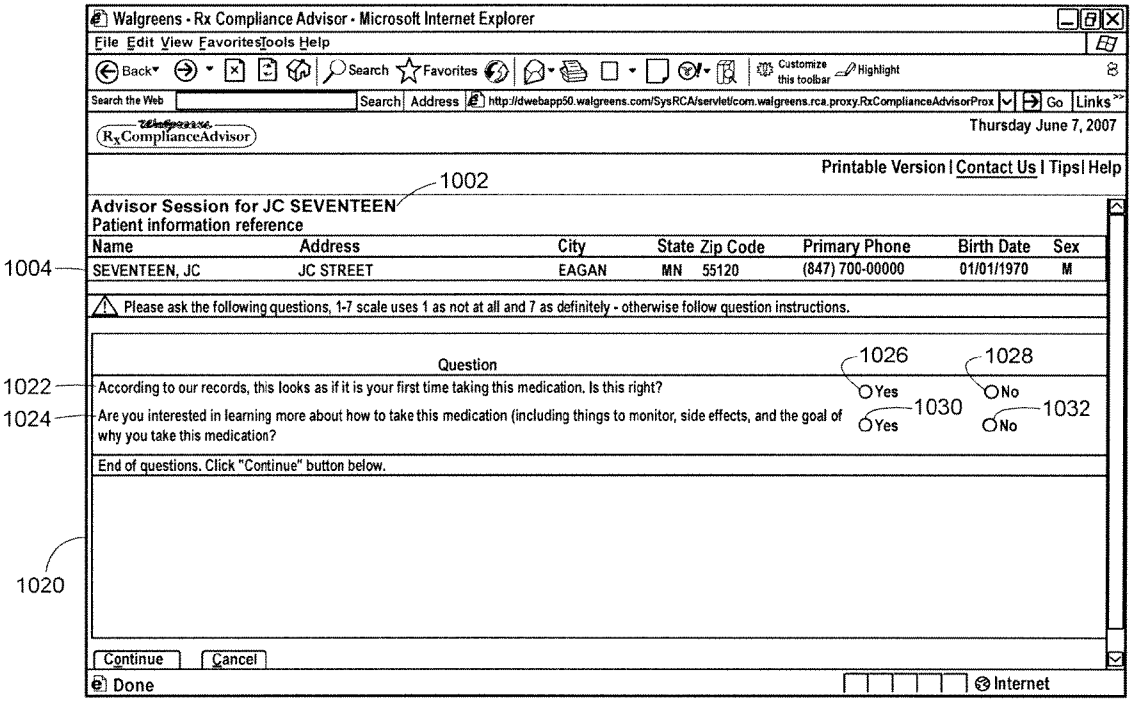

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Customize this toolbar Highlight
Search the Web Search Address http://dwebapp50.walgreens.com/SysRCA/servlet/com.walgreens.rca.proxy.RxComplianceAdvisorProx Go Links
Rx ComplianceAdvisor
Thursday June 7, 2007
Printable Version | Contact Us | Tips | Help
1002
Advisor Session for JC SEVENTEEN
Patient information reference
Name Address City State Zip Code Primary Phone Birth Date Sex
1004
SEVENTEEN, JC JC STREET EAGAN MN 55120 (847) 700-00000 01/01/1970 M
Please ask the following questions, 1-7 scale uses 1 as not at all and 7 as definitely - otherwise follow question instructions.
Question
1026
1028
1022
According to our records, this looks as if it is your first time taking this medication. Is this right?
Yes
No
1024
Are you interested in learning more about how to take this medication (including things to monitor, side effects, and the goal of why you take this medication?
1030
1032
Yes
No
End of questions. Click "Continue" button below.
1020
Continue
Cancel
Done
Internet

FIG. 20

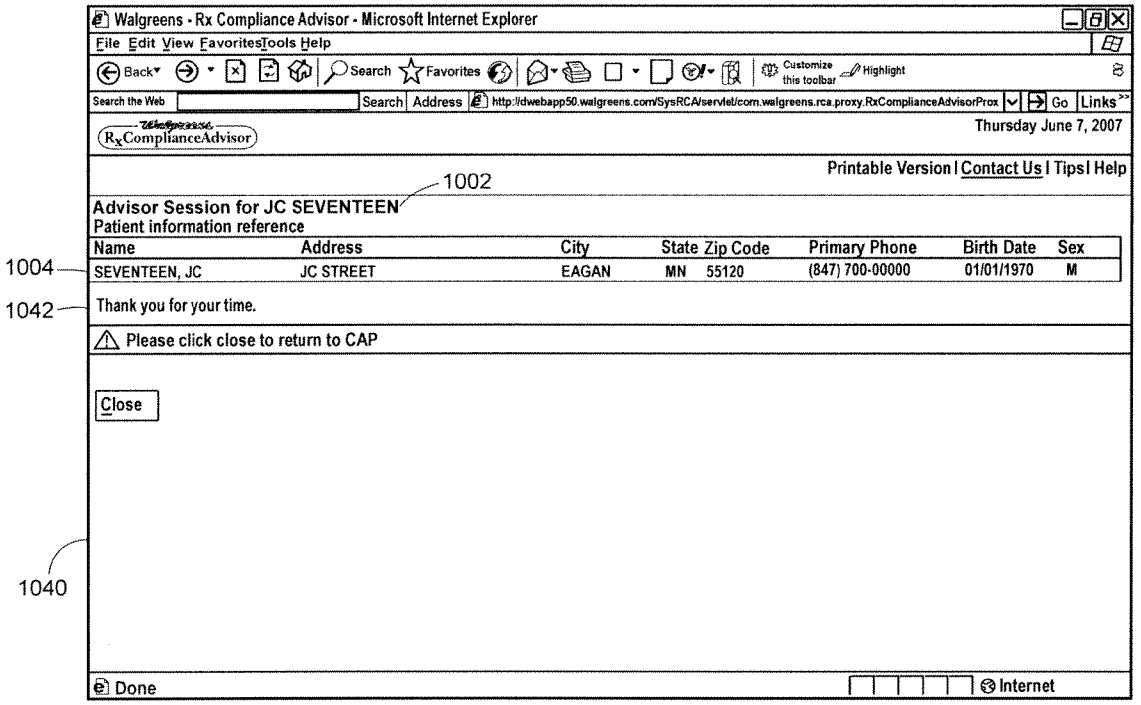

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Customize this toolbar Highlight
Search the Web Search Address http://dwebapp50.walgreens.com/SysRCA/servlet/com.walgreens.rca.proxy.RxComplianceAdvisorProx Go Links
RxComplianceAdvisor
Thursday June 7, 2007
Printable Version | Contact Us | Tips | Help
1002
Advisor Session for JC SEVENTEEN
Patient information reference
Name Address City State Zip Code Primary Phone Birth Date Sex
1004
SEVENTEEN, JC JC STREET EAGAN MN 55120 (847) 700-00000 01/01/1970 M
1042
Thank you for your time.
Please click close to return to CAP
Close
1040
Done
Internet

FIG. 21

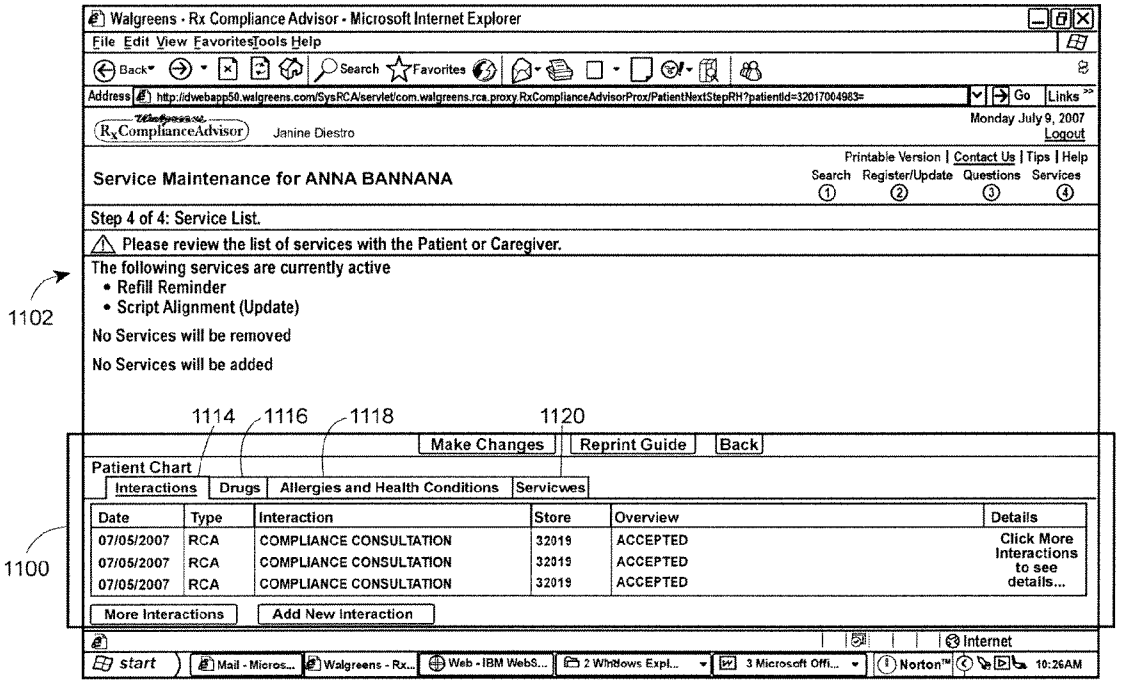
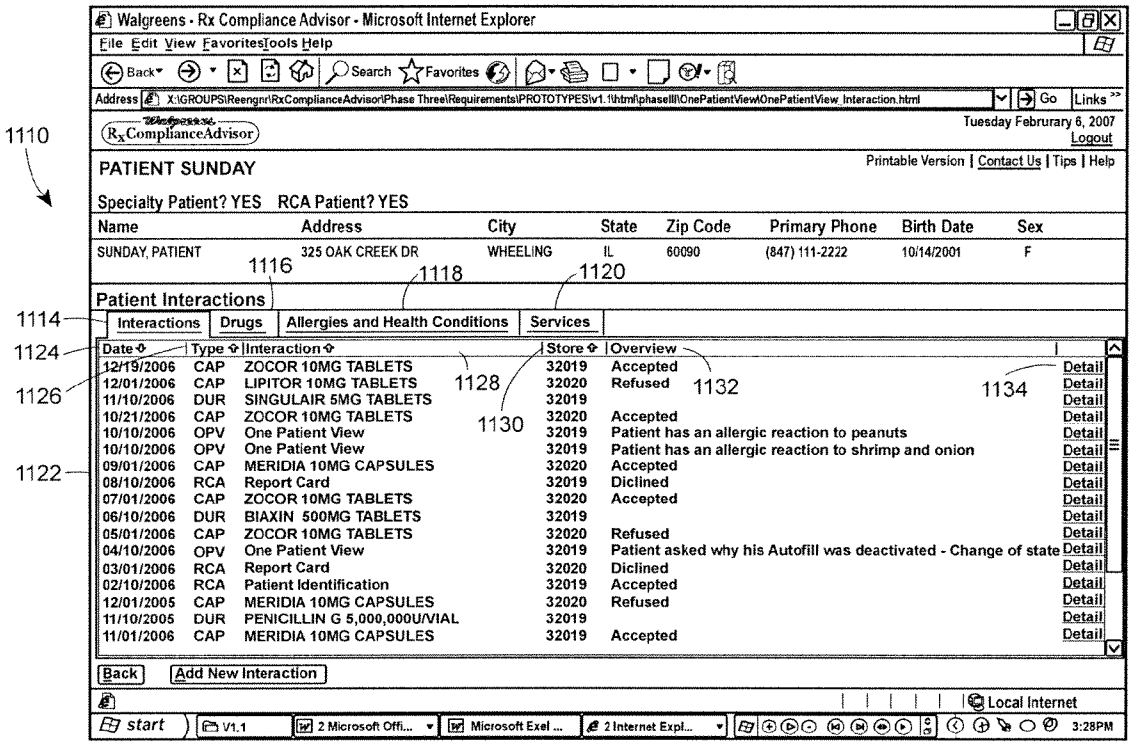

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://dwebapp50.walgreens.com/SysRCA/servlet/com.walgreens.rca.proxy.RxComplianceAdvisorProx/PatientNextStepRH?patientId=32017004983=
Go Links
RxComplianceAdvisor
Janine Diestro
Monday July 9, 2007
Logout
Printable Version | Contact Us | Tips | Help
Service Maintenance for ANNA BANNANA
Search Register/Update Questions Services
1 2 3 4
Step 4 of 4: Service List.
Please review the list of services with the Patient or Caregiver.
The following services are currently active
• Refill Reminder
• Script Alignment (Update)
No Services will be removed
No Services will be added
1102
1114
1116
1118
1120
Make Changes
Reprint Guide
Back
Patient Chart
Interactions
Drugs
Allergies and Health Conditions
Servicwes
Date
Type
Interaction
Store
Overview
Details
07/05/2007 RCA COMPLIANCE CONSULTATION 32019 ACCEPTED
07/05/2007 RCA COMPLIANCE CONSULTATION 32019 ACCEPTED
07/05/2007 RCA COMPLIANCE CONSULTATION 32019 ACCEPTED
Click More Interactions to see details...
1100
More Interactions
Add New Interaction
Internet
start
Mail - Micros...
Walgreens - Rx...
Web - IBM WebS...
2 Windows Expl...
3 Microsoft Offi...
Norton™
10:26AM

FIG. 22


Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
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Address X:\GROUPS\Reengrn\RxComplianceAdvisor\Phase Three\Requirements\PROTOTYPES\v1.1\html\phaseIII\OnePatientView\OnePatientView_Interaction.html
Rx ComplianceAdvisor
Tuesday Februrary 6, 2007
Logout
Printable Version | Contact Us | Tips | Help
PATIENT SUNDAY
Specialty Patient? YES RCA Patient? YES
Name Address City State Zip Code Primary Phone Birth Date Sex
SUNDAY, PATIENT 325 OAK CREEK DR WHEELING IL 60090 (847) 111-2222 10/14/2001 F
Patient Interactions
Interactions Drugs Allergies and Health Conditions Services
Date Type Interaction Store Overview
12/19/2006 CAP ZOCOR 10MG TABLETS 32019 Accepted Detail
12/01/2006 CAP LIPITOR 10MG TABLETS 32020 Refused Detail
11/10/2006 DUR SINGULAIR 5MG TABLETS 32019 Detail
10/21/2006 CAP ZOCOR 10MG TABLETS 32020 Accepted Detail
10/10/2006 OPV One Patient View 32019 Patient has an allergic reaction to peanuts Detail
10/10/2006 OPV One Patient View 32019 Patient has an allergic reaction to shrimp and onion Detail
09/01/2006 CAP MERIDIA 10MG CAPSULES 32020 Accepted Detail
08/10/2006 RCA Report Card 32019 Diclined Detail
07/01/2006 CAP ZOCOR 10MG TABLETS 32020 Accepted Detail
06/10/2006 DUR BIAXIN 500MG TABLETS 32019 Detail
05/01/2006 CAP ZOCOR 10MG TABLETS 32020 Refused Detail
04/10/2006 OPV One Patient View 32019 Patient asked why his Autofill was deactivated - Change of state Detail
03/01/2006 RCA Report Card 32020 Diclined Detail
02/10/2006 RCA Patient Identification 32019 Accepted Detail
12/01/2005 CAP MERIDIA 10MG CAPSULES 32020 Refused Detail
11/10/2005 DUR PENICILLIN G 5,000,000U/VIAL 32019 Detail
11/01/2006 CAP MERIDIA 10MG CAPSULES 32019 Accepted Detail
Back
Add New Interaction
Local Internet
start
3:28PM
1110
1114
1116
1118
1120
1122
1124
1126
1128
1130
1132
1134

FIG. 23

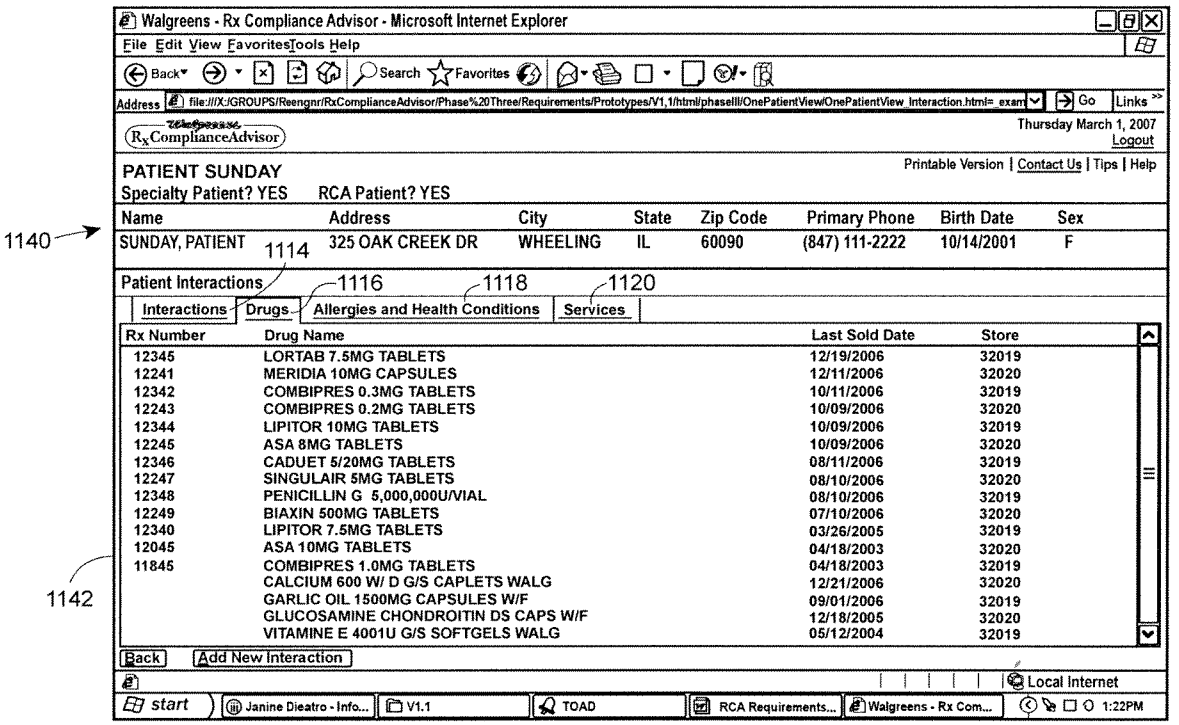

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address file:///X:/GROUPS/Reengnr/RxComplianceAdvisor/Phase%20Three/Requirements/Prototypes/V1.1/html/phaseIII/OnePatientView/OnePatientView_Interaction.html=_exam
Go Links
RxComplianceAdvisor
Thursday March 1, 2007
Logout
Printable Version | Contact Us | Tips | Help
PATIENT SUNDAY
Specialty Patient? YES RCA Patient? YES
1140
Name Address City State Zip Code Primary Phone Birth Date Sex
SUNDAY, PATIENT 325 OAK CREEK DR WHEELING IL 60090 (847) 111-2222 10/14/2001 F
1114
Patient Interactions
1116
1118
1120
Interactions Drugs Allergies and Health Conditions Services
1142
Rx Number Drug Name Last Sold Date Store
12345 LORTAB 7.5MG TABLETS 12/19/2006 32019
12241 MERIDIA 10MG CAPSULES 12/11/2006 32020
12342 COMBIPRES 0.3MG TABLETS 10/11/2006 32019
12243 COMBIPRES 0.2MG TABLETS 10/09/2006 32020
12344 LIPITOR 10MG TABLETS 10/09/2006 32019
12245 ASA 8MG TABLETS 10/09/2006 32020
12346 CADUET 5/20MG TABLETS 08/11/2006 32019
12247 SINGULAIR 5MG TABLETS 08/10/2006 32020
12348 PENICILLIN G 5,000,000U/VIAL 08/10/2006 32019
12249 BIAXIN 500MG TABLETS 07/10/2006 32020
12340 LIPITOR 7.5MG TABLETS 03/26/2005 32019
12045 ASA 10MG TABLETS 04/18/2003 32020
11845 COMBIPRES 1.0MG TABLETS 04/18/2003 32019
CALCIUM 600 W/ D G/S CAPLETS WALG 12/21/2006 32020
GARLIC OIL 1500MG CAPSULES W/F 09/01/2006 32019
GLUCOSAMINE CHONDROITIN DS CAPS W/F 12/18/2005 32020
VITAMINE E 4001U G/S SOFTGELS WALG 05/12/2004 32019
Back Add New Interaction
Local Internet
start Janine Dieatro - Info... V1.1 TOAD RCA Requirements... Walgreens - Rx Com... 1:22PM

FIG. 24

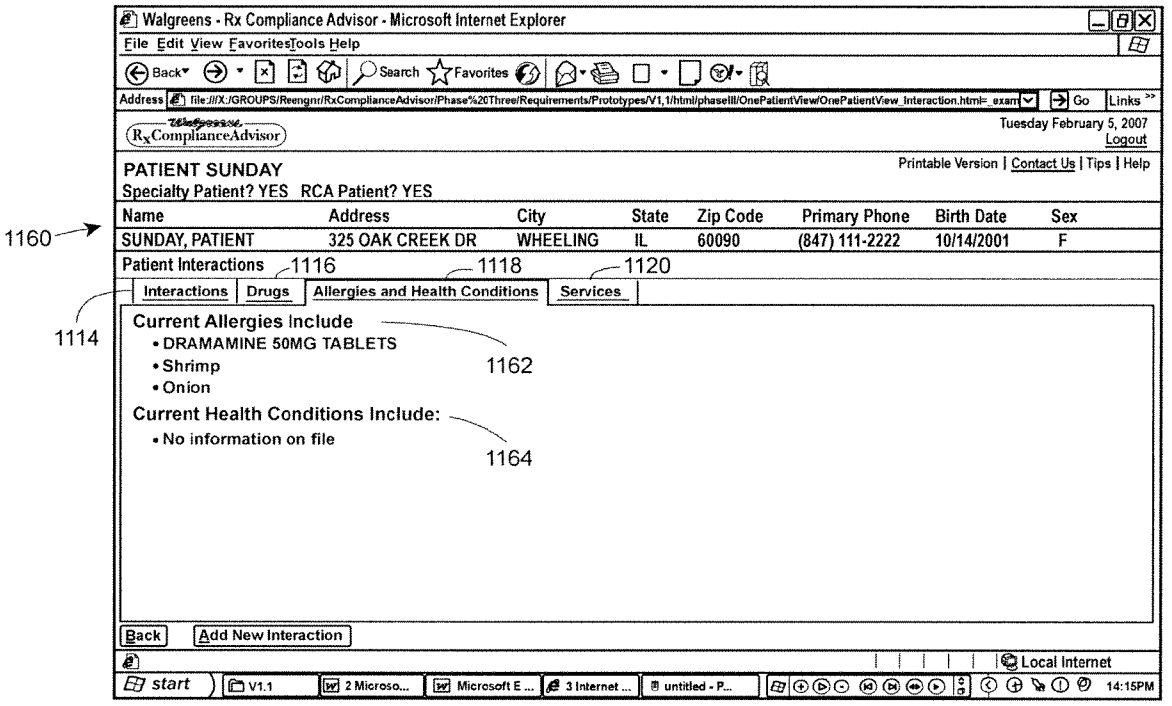

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address file://X:/GROUPS/Reengnr/RxComplianceAdvisor/Phase%20Three/Requirements/Prototypes/V1.1/html/phaseIII/OnePatientView/OnePatientView_Interaction.html#_exam
Go Links
RxComplianceAdvisor
Tuesday February 5, 2007
Logout
PATIENT SUNDAY
Printable Version | Contact Us | Tips | Help
Specialty Patient? YES RCA Patient? YES
Name Address City State Zip Code Primary Phone Birth Date Sex
SUNDAY, PATIENT 325 OAK CREEK DR WHEELING IL 60090 (847) 111-2222 10/14/2001 F
1160
Patient Interactions
1116
1118
1120
Interactions Drugs Allergies and Health Conditions Services
1114
Current Allergies Include
• DRAMAMINE 50MG TABLETS
• Shrimp
• Onion
1162
Current Health Conditions Include:
• No information on file
1164
Back
Add New Interaction
Local Internet
start
V1.1
2 Microso...
Microsoft E ...
3 Internet ...
untitled - P...
14:15PM

FIG. 25

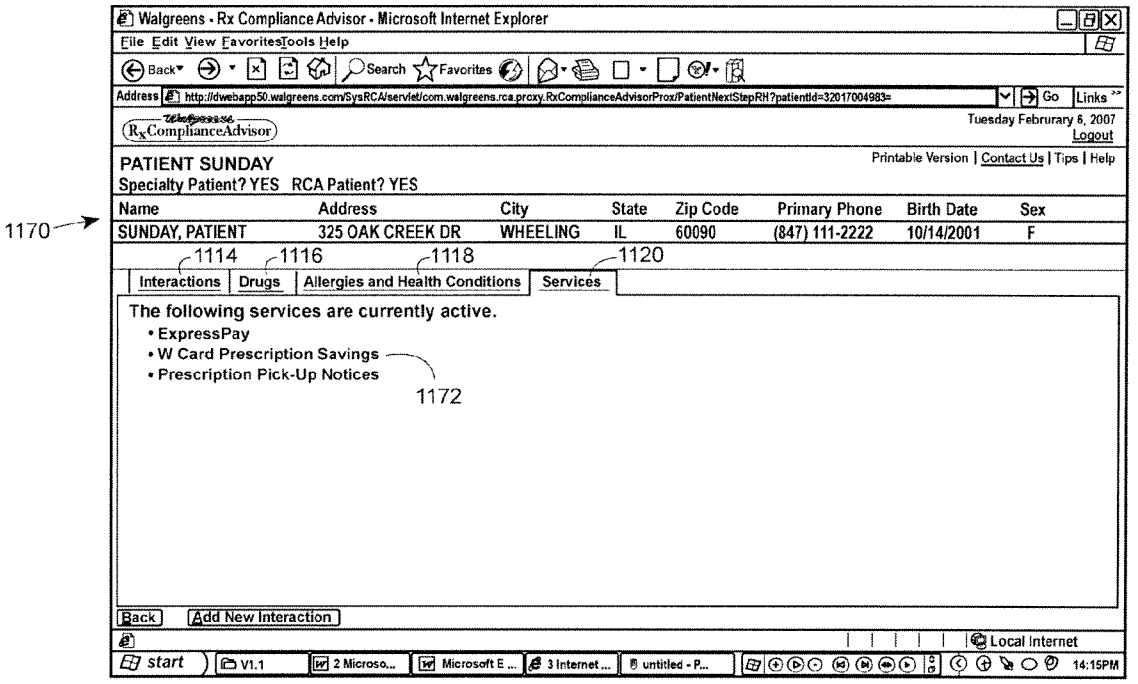
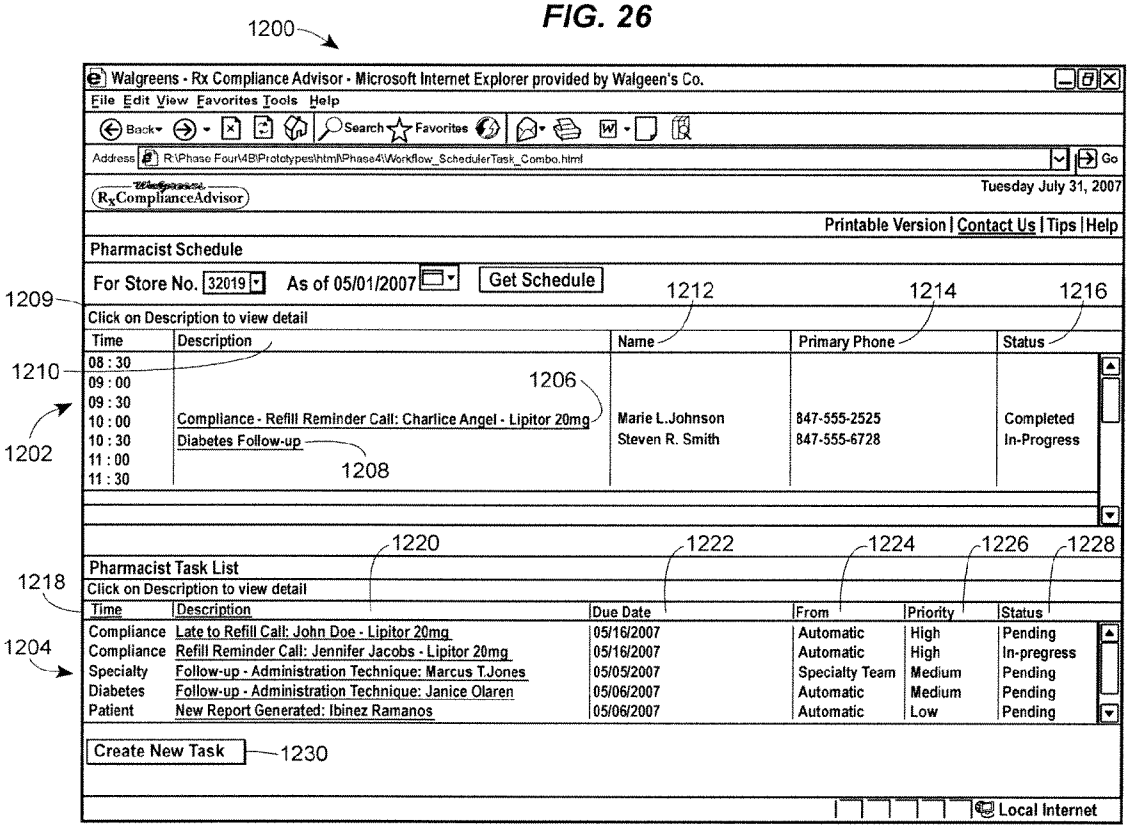

Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://dwebapp50.walgreens.com/SysRCA/servlet/com.walgreens.rca.proxy.RxComplianceAdvisorProx/PatientNextStepRH?patientId=32017004983=
Go Links
RxComplianceAdvisor
Tuesday Februrary 6, 2007
Logout
Printable Version | Contact Us | Tips | Help
PATIENT SUNDAY
Specialty Patient? YES RCA Patient? YES
1170
Name Address City State Zip Code Primary Phone Birth Date Sex
SUNDAY, PATIENT 325 OAK CREEK DR WHEELING IL 60090 (847) 111-2222 10/14/2001 F
1114
1116
1118
1120
Interactions
Drugs
Allergies and Health Conditions
Services
The following services are currently active.
• ExpressPay
• W Card Prescription Savings
• Prescription Pick-Up Notices
1172
Back
Add New Interaction
Local Internet
start
V1.1
2 Microso...
Microsoft E ...
3 Internet ...
untitled - P...
14:15PM

FIG. 26


1200
Walgreens - Rx Compliance Advisor - Microsoft Internet Explorer provided by Walgeen's Co.
File Edit View Favorites Tools Help
Back Search Favorites
Address R:\Phase Four\4B\Prototypes\html\Phase4\Workflow_SchedulerTask_Combo.html
Go
RxComplianceAdvisor
Tuesday July 31, 2007
Printable Version | Contact Us | Tips | Help
Pharmacist Schedule
For Store No. 32019 As of 05/01/2007 Get Schedule
1209
1212
1214
1216
Click on Description to view detail
Time
Description
Name
Primary Phone
Status
1210
08 : 30
09 : 00
09 : 30
10 : 00
10 : 30
11 : 00
11 : 30
1206
Compliance - Refill Reminder Call: Charlice Angel - Lipitor 20mg
Diabetes Follow-up
1208
Marie L.Johnson
Steven R. Smith
847-555-2525
847-555-6728
Completed
In-Progress
1202
1220
1222
1224
1226
1228
Pharmacist Task List
1218
Click on Description to view detail
Time
Description
Due Date
From
Priority
Status
1204
Compliance Late to Refill Call: John Doe - Lipitor 20mg 05/16/2007 Automatic High Pending
Compliance Refill Reminder Call: Jennifer Jacobs - Lipitor 20mg 05/16/2007 Automatic High In-pregress
Specialty Follow-up - Administration Technique: Marcus TJones 05/05/2007 Specialty Team Medium Pending
Diabetes Follow-up - Administration Technique: Janice Olaren 05/06/2007 Automatic Medium Pending
Patient New Report Generated: Ibinez Ramanos 05/06/2007 Automatic Low Pending
Create New Task
1230
Local Internet

INTERFACE SYSTEM FOR DISPLAYING COMPREHENSIVE PATIENT MEDICATION RECORD

FIELD OF THE INVENTION

[0001] The present invention relates to a system for delivering comprehensive medication management services to patients. An embodiment a medication management system includes hardware, software, and pharmacy workflows for identifying patients who may benefit from medication management services, identifying the medication management services most appropriate for individual patients, providing medication therapy compliance feedback to patients, and implementing reimbursable services on behalf of stakeholders in the form of campaigns providing customized interactions with targeted patients and documenting the results.

BACKGROUND

[0002] Effective management of a patient's medication therapy is an important factor in achieving successful treatment results. The closer a patient adheres to his or her prescribed medication treatment program, the more likely that the treatment will be effective. Unfortunately, in many instances patients do not adequately comply with their medication therapy programs. Poor compliance with treatment programs can result in negative health impacts for the patient as well as negative impacts on those who have an interest in maintaining the patient's health.

[0003] In a typical medication therapy setting there is a number of parties or stakeholders who have an in interest in achieving a successful result. FIG. **1** is a diagram illustrating a number of the stakeholders who may have an interest in a patient's successful medication treatment outcome. At the center is the patient **10**. No stakeholder has a greater interest in an effective medication treatment program than the patient **10**. Many patients, such as children or the elderly, may have a caregiver **12** who is responsible for caring for them. A caregiver **12** may be responsible for scheduling doctor appointments, transporting the patient to their appointments, getting prescriptions filled, administering medications, and so forth. The doctor **14** treating the patient **10** has a professional interest in the patient's health. The pharmacist **17** who fills the patient's prescriptions also has a professional interest in serving the patient similar to that of the patient's doctor **14**. The pharmacy **16** that sells the patient his or her prescribed medications has a business interest in continuing to serve the patient. If the patient is covered by insurance or if the patient is a member of a managed-care organization which pays for some or all of the patient's medications, the insurance company or managed-care organization **18** will have an interest in managing the patient's medications and keeping costs down. At a further remove, the pharmaceutical company **20** that manufactures the patient's medications has an interest in continuing to sell medications to the patient **10**. Even more generally, pharmacy trade groups **22**, such as the American Pharmacists' Association, The American College of Clinical Pharmacy and others, may have an interest in learning about effective medication therapy management techniques, as well as trends in the industry, successful drug treatments and the like. Similarly, doctors, nurses, hospitals and other members of the broader medical community **214** will have an interest in learning about effective medication therapies, methods of keeping costs down and improved treatment outcomes, as will public health organizations **26** and government agencies **28** tasked with providing health-related services.

[0004] Of the stakeholders identified in FIG. **1**, only the caregiver **12**, the doctor **14**, the pharmacy **16** and perhaps the insurance company or managed-care organization **18** are likely to have direct contact with the patient **10**. Nonetheless, other stakeholders may wish to obtain data regarding the patient and the patient's medication therapy program. Various stakeholders may also wish to communicate important messages to individual patients regarding their medication treatment programs. What is more, even though the caregiver **12**, the doctor **14**, the pharmacy **16** and the even insurance company/managed-care organization **18** may have somewhat regular contact with the patient **10**, the nature of the relationship with the patient and the frequency of contact with the patient may vary significantly for each entity. For example, the patient is unlikely to discuss specifics of his or her treatment with the insurance company **18**. The doctor **14** prescribes the patient's medication but may not have accurate information about the patient's compliance with the prescribed medication therapy, and so forth. Thus, while each stakeholder may be in a position to obtain a limited amount of information about the patient **10** and the patient's medication treatment program, the limited nature of the information results in each party receiving only a partial view of what is actually taking place with regard to the patient's medication therapy.

[0005] In many cases, data collected by or known by one stakeholder may be highly valuable to one or more other stakeholders. For example, once a patient's doctor **14** prescribes a specific medication treatment, the doctor has no way of knowing how closely the patient is adhering to the prescribed treatment regimen. The pharmacy, on the other hand, is in a position to review the patient's prescription fill history to determine whether the patient has had enough medication on hand to comply with the prescribed treatment program. Since a patient's failure to comply with his or her doctor's prescribed treatment program could lead to an unsuccessful result, which in turn could lead to a more serious illness and more expensive treatments, many of the stakeholders identified in FIG. **1** will have an interest in knowing whether the patient **10** is complying with his or her prescribed medication therapy.

[0006] Although there are many stakeholders who may have an interest in a patient's medication therapy, a successful medication management program must focus on the individual patient. Each individual patient will have unique circumstances that define the medication management issues facing that patient. For example, some patients may have a very complicated medication regimen that is difficult to keep track of and which is nearly impossible to follow without fault. Other patients may have a nonchalant attitude toward their medication which may cause them to frequently miss doses. Still other patients may not have the financial resources to cover the costs of their medications. Some treatments may require frequent tests to ensure the efficacy of the treatment or to detect the presence of adverse side effects. A medication management system must be capable of dealing with all of these factors and more in order to deliver all of the services necessary to help patients manage their medications.

[0007] A medication management system is desired that will take into account all of the unique circumstances facing individual patients and provide services uniquely tailored to meet each patient's needs. Such a medication management

program must be scalable to meet the individualized needs of hundreds of thousands or even millions of individual patients. Further it is desired that a medication management system may serve as a central repository for information regarding patients and their medication treatment programs. This information may be collected and presented in ways that will help improve patient compliance with their medication treatment programs and facilitate the delivery of compliance related services. It also desired that a medication management system provide a mechanism for identifying patients who may benefit from compliance related services and communicating the availability of such services to such patients. It is also desirable to identify other classes of patients in order to deliver special messages or have other customized interactions with the members of such classes of patients on behalf of various stakeholders having an interest in the various patients' treatment outcomes.

SUMMARY

[0008] The present invention provides a comprehensive medication management system. The comprehensive medication management system offers a number of different compliance related services that may be offered to patients in order to improve compliance with their individual medication therapy programs. The medication therapy system helps to identify the personal compliance barriers facing individual patients, and recommends compliance services that are best suited for overcoming a patient's personal compliance barriers. The medication management system further provides feedback to patients to document how their compliance has improved (or not) as a result of the compliance services they are receiving. According to an embodiment, a medication management system may be expanded to provide reimbursable cognitive services to third party stakeholders. Reimbursable cognitive services may include medication therapy management (MTM); insurance benefits communication services; quality assurance programs; medication safety, efficiency and appropriate usage programs; and medication adherence and persistence programs; among others. An embodiment of a medication management system actively identifies patients who may benefit from compliance services and blocks transactions with such patients at the point of sale until a consultation takes place between a pharmacist and the patient in which the benefits of the compliance related services are explained to the patient. The point of sale block may be expanded so that other classes of patients may be identified and their transactions blocked at the point of sale until some other message is delivered or some other customized interaction with the patient takes place. The expanded point of sale blocking feature may be used to implement reimbursable campaigns on behalf of third party stakeholders to reach targeted patients. For example, a third party stakeholder may be willing to pay for a particular message to be delivered to all of a pharmacy's patients taking a certain medication, or to gather information from patients about side effects or some other subject related to their medication therapy.

[0009] A medication management system may serve as a central repository of information about a patient's medication treatment program. The medication management system may provide quick and easy access to a patient's entire medication history to facilitate a consultation between a pharmacist and the patient. Additionally, the medication management system may generate lists of tasks for pharmacists to perform in order to deliver the compliance related services that have been offered to individual patients.

[0010] Other systems, methods, features and advantages of the invention will be, or will become, apparent to those skilled in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages included within this description be within the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1** is a diagram illustrating the various stakeholders having an interest in a patient's medication therapy outcome.

[0012] FIG. **2** is a diagram illustrating the communication paths established between the various stakeholders having an interest in a patient's medication therapy outcome and the patient according to an embodiment of a medication management system.

[0013] FIG. **3** is a block diagram of an embodiment of a medication management system.

[0014] FIG. **4** is a flow chart showing the process flow of a patient consultation with a pharmacist for purposes of identifying appropriate compliance services recommendations for the patient.

[0015] FIG. **5** is a screen shot of a patient look-up user interface page.

[0016] FIG. **6** is a screen shot of a patient contact information user interface page.

[0017] FIG. **7** is a screen shot of a patient questionnaire user interface page.

[0018] FIG. **8** is a screen shot of a first service maintenance user interface page.

[0019] FIG. **9** is a screen shot of a second service maintenance user interface page.

[0020] FIG. **10** is a sample medication management printed solutions guide.

[0021] FIG. **11** is a is a sample patient compliance report card.

[0022] FIG. **12** is a sample medication manager chart.

[0023] FIG. **13** is a sample personal medication record (PMR).

[0024] FIG. **14** is a flow chart showing the process flow for defining a targeted campaign for identifying and interacting with patients.

[0025] FIG. **15** is a screen shot of a campaign editing user interface page.

[0026] FIG. **16** is a screen shot of a campaign specification user interface page

[0027] FIG. **17** is a is a screen shot of a campaign component transition definition user interface page.

[0028] FIG. **18** is a is a screen shot of a campaign information page.

[0029] FIG. **19** is a screen shot of a campaign question set page.

[0030] FIG. **20** is a screen shot of a campaign thank you page.

[0031] FIG. **21** is a screen shot of a user interface page including a consolidated patient profile view.

[0032] FIG. **22** is a screen shot of a full screen patient profile user interface page showing a list of patient interactions.

[0033] FIG. **23** is a screen shot of a full screen patient profile user interface page showing a list of drugs that have been prescribed to a patient.

[0034] FIG. **24** is a screen shot of a full screen patient profile user interface page showing a list of a patient's current allergies and health conditions.

[0035] FIG. **25** is a screen shot of a full screen patient profile user interface page showing a list of services a patient is currently receiving.

[0036] FIG. **26** is a screen shot of a pharmacist task list interface page.

DETAILED DESCRIPTION

[0037] The pharmacy is a significant point of contact between patients and the health-care industry. The present medication management system leverages this relationship to provide additional services to patients for helping the patients manage their medication treatment programs. The pharmacy helps monitor the patient's compliance with his or her medication therapy and provides services for helping patients improve compliance. The medication management system opens lines of communication that run through the pharmacy allowing various stakeholders to interact with patients in a manner previously unavailable.

[0038] For purposes of the present disclosure, the pharmacy may be any of the outlets through which the entity implementing the present medication management system sells prescription medications to patients. For example, the pharmacy may comprise a single independent drug store or any one of a number of branch stores in a large drugstore chain. The pharmacy may also be or include a mail-order or on-line pharmacy, and one or more specialty pharmacies dealing in rare expensive medications or drugs that require special administering procedures. Typically, the pharmacy will have a direct relationship with a very large number of patients. Because of the direct relationship between the pharmacy and such a vast pool of individual patients, the pharmacy is ideally placed to provide a number of medication therapy management services of significant value to both the patients and various stakeholders in the medical services delivery community.

[0039] FIG. **2** illustrates the relationships between the various stakeholders and the patient according to an embodiment of a comprehensive medication management system. The medication management system is patient-centric. The medication management system builds on the direct relationship between the pharmacy **16** and individual patients **10** who purchase their medications from the pharmacy **16**. Communications between the various stakeholders, including the doctor **14**, the insurance/managed-care provider **18**; drug manufacturers **20**; pharmacy trade groups **22**; the larger medical community **24**; public health organizations **26**; government agencies **28**, and the patients **10** are all routed through the pharmacy **16**. In cases where a caregiver **12** is present, communications with the patient may be routed through the caregiver **12**. Of course, various stakeholders may have additional communications with patients outside the present system (for example, it is assumed that patients will continue to visit their doctors and that important information about the patient's health will be exchanged at those visits), however, within the context of managing the patient's medication therapy through the present medication management system the primary point of contact with the patient **10** is through the pharmacy **16**. The various stakeholders may communicate messages to individual patients through the pharmacy **16** and the pharmacy **16** may forward appropriate medication management data back to the various stakeholders. (Appropriate medication management data that may be communicated back to the various stakeholders may include, for example, non-patient specific information, information that an individual patient has agreed may be sent to a specific stakeholder, and so forth. In no circumstances should confidential patient information be sent from the pharmacy **16** to an outside party without the patient's authorization.) Routing communications between the various stakeholders and the patients through the pharmacy **16** allows the pharmacy to control what and how information is passed on to the patient. The pharmacy **16** may create a standardized and systematic approach toward patient communication that ensures that a consistent unified message is delivered to the patient.

[0040] FIG. **3** shows a block diagram of the architecture of an embodiment of a medication management system **100**. The systems and processes implemented by the medication management system **100** facilitate the development of individualized medication management programs specially designed to meet the needs of individual patients. Nonetheless, the medication management system **100** may be implemented on a scale that allows any number of individual patients to be enrolled in the medication management system **100**. The high-level architecture includes both hardware and software applications, as well as various data communications channels for communicating data between the various hardware and software components. The medication management system **100** may be roughly divided into front-end components **102** and back-end components **104**. The front-end components **102** comprise the hardware and software components associated with a pharmacy's sales outlets. For example, a pharmacy may include a number of retail branch stores **144**, an on-line pharmacy **146**, a mail order pharmacy **148** and a specialty pharmacy **149**. The front end components **102** may comprise the hardware and software applications found in each of the pharmacy's retail outlets.

[0041] The retail branch stores **144** may include one or more pharmacy workstations **132**. The pharmacy workstations **132** may include software applications for managing pharmacy operations, including filling patient prescriptions, and the like. The pharmacy workstations **132** may also include software applications for implementing the present medication management systems. Each store may also include one or more point of sale (POS) terminals **138** for performing cash register functions and certain medication management functions associated with the medication management system **100**, as will be described. The POS terminal **138** may include an LCD **140** or other display device for displaying messages to the pharmacist or other pharmacy personnel. (For the remainder of the present disclosure all pharmacy personnel will be referred to as "the pharmacist" even though various tasks within the pharmacy may be performed by personnel who are not registered pharmacists but who operate under a pharmacist's supervision.) The POS terminal may also include a bar code reader **142** for reading bar codes on product packaging and the like. The individual pharmacy workstations **132** and the POS terminals **138** at a particular store may be connected to an in-store local area network **134**. The local area **134** network may include an application server **136** which communicates with the backend systems **104** over a wide area network **130**. A similar arrangement may be found in the pharmacy's other divisions such as

an on-line pharmacy **146**, a mail order pharmacy **148**, a specialty pharmacy **149**, or the like. The wide area network **130** may be a proprietary network, a secure public internet, a virtual private network or some other type of secure network.

[0042] The backend components **104** include medication management central processing systems **106** and legacy systems and services **150**. The legacy systems and services **150** may include a pharmacy's existing hardware and software systems associated with the delivery of pharmacy services to patients. For example, the legacy systems **150** may execute software applications supporting pharmacy operations, including filling patient prescriptions, keeping track of patients' fill histories, and the like. The legacy systems **150** may also provide ad hoc medication management services that may be integrated into the comprehensive medication management system **100**. The legacy systems **150** may include legacy data stores **152** for storing patient information such as the patient's name, address, phone number, insurance carrier, prescription history, and the like, for all patients who have purchased prescription medications from the pharmacy **16**.

[0043] The medication management central processing systems **106** may include one or more computer processors adapted and configured to execute a number of software applications and other components of the medication management system **100**. The central processing systems **106** also include a medication management transactional database **108**. The medication management transactional database **108** is adapted to store patient data related to the operation of the medication management system **100**. The various applications executed by the central processing systems **106** may retrieve data from and write data to the transactional database **108** and the legacy data stored **152**. The applications executed by the central processing systems **106** include a central processing web server **112** and a consultation manager **110**. The consultation manager **110** is a web-based tool that assists pharmacists in conducting compliance consultations with patients. The consultation manager **110** interacts with other software components of the medication management system executed by the central processing systems **106** and generates web based interface pages that are distributed to pharmacy workstations **132** by the web server **112** in response to specific URL requests from the pharmacy workstations **132**. The central processing systems further include a patient identification module **114**; a rules engine **116**; an intervention engine **120**; a patient medical record generator **122**; and a task list generator **124**.

[0044] Each pharmacy workstation **132** includes a web browser application. The web pages served by the web server **112** are displayed by the web browser applications on the pharmacy workstations **132**, providing a graphical user interface by which pharmacists may interact with the medication management system **100**. The various web pages forming the user interface may include data pulled from both the medication management transactional database **108** and the legacy data stores **152**. The various software applications executed by the central processing systems **106** are responsible for gathering the appropriate data and generating the content included in the user interface pages sent from the web server **112** to the various pharmacy workstations **132**. The software applications may be executed on the same computer processor as the web server application **112** or on different computer processors. Furthermore, the medication management system **100** may also rely on software applications executed by legacy systems **150** when legacy software applications provide services and other functionality that are incorporated into a comprehensive medication management program.

[0045] As mentioned, the consultation manager **110** is a web based tool for assisting pharmacists in conducting consultations with patients for determining which compliance services should be recommended to individual patients. The patient identification module **114** performs a look-up function for identifying patients who contact the pharmacy and accessing their records and personal data. The rules engine **116** is an application designed to identify the most appropriate services to be recommended to patients based on the patient's answers to questions posed by the pharmacist during a consultation session. The personal medical record (PMR) generator **122** pulls together patient data from multiple different data sources in order to generate a comprehensive view of a patient's medical profile. The data collected by the generator **122** may be used to support a PMR service in which a patient is provided with a printed version of their PMR each time they have a prescription filled.

[0046] The intervention engine **120** defines rules for identifying patients to be blocked at the point of sale when they have their prescriptions filled. Patients may be blocked at the point of sale so that some action relating to their medication therapy may be taken before the transaction is complete. The action to be taken may compromise delivering a message to the patient, scheduling a consultation or some other type of appointment, asking questions and getting feedback from the patient, or the like. When a patient is blocked at the point of sale, the transaction may not be completed until the particular task is completed. Finally, the task list generator **124** is responsible for generating lists of tasks to be performed by pharmacists at various facilities operated by the pharmacy **16**. Tasks may include contacting individual patients who have signed up for personal refill reminders, preparing automatically refilled prescriptions, scheduling patient consultations, and the like.

[0047] The medication management system back-end systems **104** may further include one or more administrator workstations **160**. An administrator workstation **160** allows an authorized user (an administrator) to access the various applications running on the central processing systems **106** to alter or adjust the operation of the medication management system **100**. For example, one or more stakeholders **162** may wish to institute an educational campaign in which they deliver an educational message to a certain class of patients. The stakeholders **162** may contact the administrator and describe the various characteristics of the patients the stakeholder would like to reach. The administrator may then access the central processing systems **106** via the administrator workstation **140** and alter the rules implemented by the intervention engine **120** for identifying patients who are to be blocked at the point of sale when their next prescription is filled. Alternatively, various processes may be automated such that the stakeholders **162** may define their own set of intervention rules or provide their own list of patients who are to be contacted during a campaign.

[0048] A patient profile may be created for every patient participating in a medication management program. A patient profile is an assemblage of all of the data related to managing the patient's medication therapy. Patient profiles may be created by the pharmacy's legacy systems **150** and stored in the legacy data stores **152**, with associated medication management data stored in the medication management transactional

database **108**. Alternatively, the patient profiles may be created as needed in the central processing systems **106** from data pulled from both the legacy systems data stores **152** the central processing systems' transactional database **108**. For example, the central processing systems **106** may pull basic patient information, such as the patient name, address, phone number, insurance group number, prescription fill history, and the like from the legacy systems data stores **152**. Additional data relating specifically to the patient's medication management program such as the services the patient is currently receiving, the patient's consultation history, messages to be conveyed to the patient, status and alert flags, and other data may be pulled from the medication management transactional database **108**.

[0049] An important component of an effective medication management program is compliance. The overarching goal of any medication management program is to ensure that patients are consistently taking their medications as prescribed by their doctors. When a patient is not complying with his or her medication therapy the reasons for the patient's non-compliance must be determined so that corrective steps may be taken. There are many different factors that may impact an individual patient's compliance with his or her medication therapy. Sorting out a complex medication regimen and adhering to it can be a significant barrier. Patients taking several different maintenance medications may have difficulty keeping track of which medications they have already taken, when different medications are supposed to be taken and so forth. Another compliance barrier may be cost. If a patient is uninsured or is having difficulty meeting his or her co-payment requirements, compliance may suffer. Indifference may also be a factor. A patient may not believe that strict adherence to his or her prescribed treatment plan is important and may inadvertently miss doses out of sheer apathy. These are but a few examples of the many different factors that may impact an individual's compliance with his or her medication therapy.

[0050] A pharmacy may implement services designed to help individual patients improve compliance with their medication therapies. Such services may be introduced on an ad hoc basis or as part of a comprehensive medication management program. A comprehensive medication management program may include implementation of a medication management system such as the medication management system **100** shown in FIG. **3**. A comprehensive medication management program may incorporate a pharmacy's existing compliance related services as well as those made available only through the medication management system **100**. Compliance related services may include automatic prescription refills for maintenance medications (Auto-Refill); regularly scheduled patient consultations with a registered pharmacist; preparing customized dose charts indicating when each dose of a patient's medications is to be taken; express payment services for automatically charging prescription charges to a patient's credit card or other account (Express Pay); pill-box services for helping patients organize their medications, including electronic "smart pill boxes"; special compliance packaging where all of a patients medications are packaged in combined multi-dose packets; pill box counseling; special re-fill reminders printed on medication labels; a prescription ready and refill reminder alert service for informing patients when their prescriptions are ready and when their prescriptions are due to be refilled (prescription refill reminder and prescription ready messages may include text messages, email messages, personal calls from a registered pharmacist, automated calls, or calls from a central call center); a redirect service to redirect reminder messages to a designated caregiver; a discount program in which qualified patients can sign up for prescription discounts; a frequent prescriber program; a script alignment service for patients taking multiple medications so that all of their prescriptions may be filled at the same time to avoid multiple trips to the pharmacy; a health information card, and so forth.

[0051] Auto refill is a service provided for patients whose maintenance medications must be refilled on a periodic basis. The pharmacy's legacy systems **150** keep track of each patient's prescriptions and when they are due to be refilled. The legacy systems **150** may perform a batch process on a periodic basis to review the prescription records of all of the pharmacy's patients who have signed up for the auto-refill service to determine which prescriptions must be refilled during an upcoming period. For example, a batch process may be performed every weekend to determine which prescriptions are due to be refilled during the upcoming week. The prescriptions that must be filled during the upcoming period are assigned to various pharmacists who are tasked with preparing the various prescriptions. When the refill prescriptions are ready the patients may be contacted over one or more preselected communication channels to notify them that their prescriptions are ready to be picked up. For example, patients may be notified by e-mail message, SMS text message, automated phone message, a telephone message from a live agent at a central call center, or a telephone message from a pharmacist at the nearest branch store where the patient can pick up his or her refilled prescription. Alternatively, the refilled prescription may be delivered directly to the patient.

[0052] A similar refill reminder service may be available for patients who opt not to participate in the auto-refill service, or whose insurance plan does not allow automatic refills, or who live in states where automatic refill services are prohibited. Like the auto-refill service, a batch process may be performed on a regular basis to identify patients who have prescriptions that are due to be refilled during an upcoming period. Reminder messages may be sent to the identified patients over designated communications channels. Again, refill reminder messages may be sent via e-mail or SMS text message, an automated telephone message, a telephone call from a live agent at a central call center, or a live message from a pharmacist at the branch store in the patient's neighborhood. Refill reminder messages may be provided on a number of different occasions. For example, reminder messages may be sent proactively or retroactively. A proactive refill reminder may be sent to the patient several days (e.g., 3 days) before a prescription is due to be refilled. A retroactive reminder message may be sent if a prescription refill is several days overdue (e.g., 7 days). Another reminder message could be sent mid-way through a patient's medication therapy, reminding the patient to complete the entire course of treatment to ensure the best treatment results.

[0053] Compliance packaging is a service that can help patients follow a complex medication regimen. Multiple medications that must be taken together at the same time of day may be packed together in individual packets. For example consider a patient taking three separate medications. The instructions for taking the first medication are to take one pill three times daily. The instructions for taking the second medication are to take one pill twice daily. The instructions for taking the third medication are to take one pill once a day.

The patient's medication may be packaged in morning, afternoon, and evening packets. A morning packet may include one pill each of the first and second medications. The noon packet may contain one pill each of the first and third medications. The evening packet may again contain one pill each of the first and second medications. Individualized compliance packaging can be implemented to conform specifically to an individual patient's medication regimen.

[0054] A medication manager service may provide a patient with a weekly or monthly dose chart. Each day represented on the chart may include a check box for each dose of the patient's medication that the patient must take during the course of the day. The patient may keep track of his or her medication by checking off the appropriate check box each time he or she takes a dose of his or her medication.

[0055] A pill box training service may be offered to patients to provide counseling for setting up their own pill box system. Such counseling may be provided face-to-face by a registered pharmacist and may be customized specifically to the patient's particular medication regimen. Alternatively, special face-to-face counseling sessions may be mandated for all first time fills on maintenance medications and on the first refill.

[0056] A prescription alignment service may be provided so that all of a patients prescriptions are arranged so that they will all come due for a re-fill at substantially the same time. Upon implementing the script alignment service, a patient may receive a reduced fill on some medications so that all of his or her medications will become due on the same date. Once this "alignment" date has been reached, all of the patient's prescriptions may be filled on the same day with the same number of days' supply of each medication so that each prescription will again come due for a refill on the same date thereafter. The alignment date may be determined by the date that is the earliest that all medications may be aligned, or a date may be chosen that would incur the least co-payment liability based on the patient's insurance plan. Alternatively, some custom alignment plan may be devised.

[0057] A frequent prescriber plan may be instituted to help defray the cost of prescription medications. Under such a program each prescription refill may be recorded. After a certain number of refills (e.g., 10 or 11) the next refill may be subsidized by the pharmacy, or the pharmacy may cover the cost up the patient's insurance co-payment, or some other cost savings measure may be implemented.

[0058] According to other compliance enhancement services, special refill reminders may be printed on the labels of maintenance medications. A redirection of reminder service may redirect automated or personal reminders from the patient to a designated caregiver, either temporarily or permanently. Electronic pill counters or electronic pill boxes may be issued to patients to further assist them in keeping track of their medications.

[0059] These are but a sampling of the types of compliance related services that may be offered by a pharmacy as part of a comprehensive medication management program. Other compliance services may be included in addition to or instead of those mentioned above in order to provide a comprehensive medication management program that meets the needs of the pharmacy's patients.

[0060] Since each patient faces different compliance barriers, the appropriate services for improving a patient's compliance will differ from one patient to another. Therefore, a first step in creating an individualized medication management program is to determine exactly what are the most significant compliance barriers facing the patient. Only after a patient's compliance barriers are known may the appropriate services be suggested for overcoming those barriers.

[0061] According to an embodiment of a medication management system, a patient's participation in a medication management program begins with a consultation between the patient and a registered pharmacist. The purpose of the consultation is to identify the patient's personal compliance barriers and to select those pharmacy services most likely to help the patient surmount those barriers. According to the medication management system **100**, the consultation manager **110** provides a web based tool to assist the pharmacist in conducting the initial compliance consultation. The consultation manager records the results of the consultation and recommends appropriate services for improving the patient's overall compliance. The consultation manager may also take steps to implement the various compliance services that have been agreed upon between the pharmacist and the patient during the consultation.

[0062] FIG. **4** is a flowchart showing the process flows for selecting pharmacy services for a patient enrolling in a medication management program. The process begins at **200** when the patient learns of the program and visits or otherwise contacts the pharmacy. The patient may learn of the program through advertising, on the recommendation of their doctor, through word of mouth, and the like. Alternatively, the pharmacy may make the determination that the patient would benefit from compliance services and may recommend the medication management program to the patient when the patient visits the pharmacy to have his or her prescription filled. In any case, when the patient expresses an interest in enrolling in the medication management program, the pharmacist accesses the medication management system at **202** using a pharmacy workstation **132**. When first accessing the medication management system the pharmacist is presented with a login screen at **204**. The pharmacist enters an appropriate login name and password, or performs some other identity authentication process. If the pharmacist's login attempt is determined to be unsuccessful at **206** process flow returns to **204** where the login screen is again displayed by the pharmacy workstation's web browser and the pharmacist can continue to enter a login name and password until the pharmacist's login is successful. Once the pharmacist successfully logs onto the system the process flow moves on to **208**.

[0063] At **208** the medication management web server **112** sends a patient inquiry page to the pharmacy workstation **132**. A sample patient inquiry page **250** is shown in FIG. **5**. The patient inquiry page **250** includes a number of search fields such as phone number **252**, birth date **254**, first name **256**, middle initial **258**, and last name **260** that can be used to search for the patient's profile. The patient inquiry page **250** further contains a button **264** for registering a new patient and a button **266** for printing a generic patient questionnaire. If at any time during the consultation process the patient does not want to continue the consultation, the pharmacist may select the Print Blank Questionnaire button **266** to print a paper version of a patient questionnaire as indicated at **244** in FIG. **4**. The questionnaire may be given to the patient who may fill out the questionnaire and return it to the pharmacy at a later time rather than continuing the face-to-face consultation with the pharmacist. Otherwise, the pharmacist may perform a patient lookup at **210** by entering the appropriate data into one or more of the patient search fields of the patient look up page

250. The data entered in various search fields are sent back to the central processing systems **106** where the patient identification module **114** searches the legacy data stores **152** for patient profiles that match the entered search criteria. Patient's whose profile data meet the search criteria are sent back to the pharmacy workstation **132**. Search results **268** are shown in the bottom half of the patient inquiry page **250**.

[0064] If, upon an initial search, the patient's profile does not appear in the search results **268**, the pharmacist may alter the search criteria at **214** in a continued effort to locate the patient's profile. If the patient's profile still cannot be found, it is likely that the patient is a new patient who has never been registered with the medication management system **100** or with the pharmacy's legacy systems **150**. In this case the pharmacist may select the Register New Patient button **264** to initiate the process of registering the new patient. Selecting the register new patient button **264** causes the medication management web server **112** to send a new patient registration page to the pharmacy workstation **132** to be displayed for the pharmacist. A sample new patient registration page **280** is shown in FIG. **6**. The new patient registration page **280** includes a plurality of blank data fields for entering new patient data. For example, the new patient registration page **280** includes fields for entering the new patient's name (first **282**, middle initial **284**, last **286**, and suffix **288**); the patient's sex **290**; phone number **292**; birthdate **294**; email address **296**, and mailing address (street address **298**, zip code **300**, city **302** and state **304**). The pharmacist enters the patient's data and selects the continue button **306**. The new data is sent back to the central processing systems **106** where a new patient profile is created and stored in the legacy data stores **152**. Once the new patient has been registered at **212**, the process moves on to **222** where the pharmacist begins the patient consultation.

[0065] Returning to **210**, if the patient profile is found in the search results list **268** on the patient inquiry page **250**, the process moves on to **216** where the pharmacist verifies the profile information with the customer and selects the appropriate patient profile from the search results list **268**. The patient's profile data are displayed on the pharmacy workstation **132**. At **218** a determination is made whether the information in the patient profile is up to date. If the customer information is up to date at **218**, the process moves on to **222**. If the customer information is not up to date, the pharmacist updates the patient information at **220** before the process moves on to **222**.

[0066] The patient consultation begins in earnest at **222**. The consultation comprises a series of guided questions that the pharmacist asks the patient in order to learn what are the most significant compliance barriers facing the patient. The patient may answer the questions according to a sliding scale such as the 7 point readiness ruler commonly used in the pharmacy industry. Using the 7 point readiness ruler, a patient answers each question with a number from 1 to 7. A lower number represents a less significant compliance barrier and a higher number represents a more significant compliance barrier. Other scales such as a 1-5 point scale or a 1-10 point scale may be employed if more or less resolution in the patient's answers is desired. The set of questions posed to the patient may be dynamic in nature, in that the questions asked during the course of the consultation may depend on answers the patient has given to earlier questions. The questions that the pharmacist asks during the consultation are generated by the consultation manager **110** and are sent to the pharmacy workstation **132** by the medication management web server **112** where they are displayed for the pharmacist by the pharmacy workstation's web browser. FIG. **7** shows a sample user interface page **320** including a portion of the question set that the pharmacist asks the patient during the course of a patient consultation. The user interface page **320** includes a short introductory paragraph **322** that the pharmacist may read to the patient explaining how the consultation will proceed. A first group of eight questions **324** is shown in the sample interface page **320**. Each question has a corresponding response scale **326**. The pharmacist reads each question to the patient and asks the patient to respond with a number from 1-7. The pharmacist records the patient's responses by selecting the appropriate radio button in the corresponding response scale **326**. The user interface page **320** further includes a Continue button **328** a Print Blank Questionnaire button **330**, a Back button **332** and a Cancel button **334**. When the pharmacist selects the Continue button **328**, the patient's responses to the questions **324** listed on the user interface page **320** are sent by the pharmacy workstation **132** back to the web server **112** over the network **130**. The consultation manager **110** records the patient's answers in the transactional database **108** and they become part of the patient's profile. Selecting the Print Blank Questionnaire button **330** again causes the pharmacy workstation **132** to print a blank version of the initial consultation questionnaire which the patient may take home and complete and return to the pharmacist at a later time. Upon receiving the completed questionnaire, the pharmacist may enter the patient's answers into the user interface pages associated with the initial consultation in order to record the patient's responses. The Back button **332** returns the interface to a previously displayed page without recording the patients responses to the questions **324**. Finally, the Cancel button **334** is provided for ending a consultation if the patient decides not to continue. Selecting the cancel button **334** may return the pharmacist to the patient look up page **250** (FIG. **5**) or some other interface page.

[0067] Returning to FIG. **4**, if at any time during the consultation **222** the patient does not want to continue, the pharmacist may print a blank questionnaire to be given to the patient at **244**. Alternatively, if the patient does not want a copy of the questionnaire, the pharmacist may simply cancel the consultation without printing the questionnaire. However, if the patient and pharmacist complete the questionnaire, the patient's responses are recorded at **226** and the rules engine **116** proceeds to determine the compliance services best suited for improving the patient's compliance.

[0068] The rules engine **116** maps the questions from the patient questionnaire to various compliance services offered by the pharmacy. The rules engine **116** takes into account the patient's answers to each question (1-7 on the readiness scale) as well as the clinical significance of the services to which each question is mapped. For example, assume that a first question maps to a first service, and a second question maps to a second service. If the patient answers the first question with a higher number on the readiness scale than the second question, the first service to which the first question is mapped will take precedence. However, if the patient answers both questions with the same number, the clinical significance of each service is considered. If the second service has a higher clinical significance, the second service prevails. Alternatively, each question may be weighted. In this case, the patient's numeric response to a question and the question's weight may be considered in determining the significance of

the service to which a question is mapped. For example, if a first question has a weight of 2 and a second question has a weight of 3 and the patient responds to each question with a 5, the weighted response to the first question is 10 and the weighted response to the second question is 15, then the service to which the second question is mapped will be given greater significance.

[0069] The rules engine **116** may include an exclusion filter **118** which identifies services that are not available for certain patients. A particular insurance plan may not support one or more services offered by the pharmacy. Some states may not allow certain services (such as Auto-Refill for example). Only certain drugs may be eligible for some services. Services should not be offered to patients living in states in which the services are prohibited, or to patients whose insurance plans will not allow the services, or if the patient's medication is not on the list of eligible drugs for a particular service. Once the services have been ranked according to the patient's responses to the questions on the questionnaire and their clinical significance, they are run against the exclusion filter. The exclusion filter will block services from being recommended to the patient if the patient belongs to an insurance plan that disallows the service, or if the branch store is located in a state that prohibits the service, or if the patient's profile indicates that the patient lives in a state that prohibits the service, or if the patient's medication is not on the list of drugs eligible for the service. Those services that are not excluded may be recommended to the patient. Preferably only a limited number of services will be recommended to the patient. For example, perhaps only the 2 or 3 highest ranking services not blocked by the exclusion filter may be recommended to the patient by the rules engine **116**.

[0070] Once the rules engine **116** has determined which compliance services are most appropriate for the patient, the consultation manager **110** generates a service maintenance page. The web server **112** forwards the service maintenance page to the pharmacy workstation **132** where it is displayed by the pharmacy workstation's web browser. FIG. **8** shows an example of a first service maintenance page **340**. The service maintenance page **340** includes a list **342** of the compliance services recommended for the patient and a list **344** of services that the patient is already actively receiving. The service maintenance page **340** further includes an Activate Now button **346** by which the pharmacist may activate the recommended services on behalf of the patient. A Save For Later button **348** saves the patient recommendations but does not activate the recommended services. When the pharmacist selects the Save For Later button **348**, a pharmacist may retrieve the patient recommendations and activate the services, or change the recommendations at a later time. A Make Change button **350** accesses a second service maintenance page in which the pharmacist may make changes to the services that will be activated on the patient's behalf. Finally, a Reprint Guide button **352** allows the pharmacist to reprint the patient's medication management solutions guide once the final set of compliance services has been selected and the services activated for the patient.

[0071] FIG. **9** shows an example of a second service maintenance page **360** for changing a patient's compliance services selections. The second service maintenance page **360** includes a list of active services **362** and a list of the other compliance services **364** offered by the pharmacy. Check boxes are provided adjacent each listed service for selecting or de-selecting the corresponding service. Currently active services and the services recommended by the Rules Engine **116** appear with their corresponding check boxes already selected. The pharmacist may make changes, selecting additional services or de-selecting services that have already been selected, by simply mouse-clicking the appropriate check box **366**. Selecting the Submit Changes and Print Guide button **368** saves any changes made to the patient's service selections, activates or deactivates any services as required, and causes a new solutions guide to be printed reflecting any changes made to the patient's active services. The Back button **370** causes the interface to return to a previously displayed page and the Cancel button **380** ends the consultation without any changes being made to the patient's active services.

[0072] Returning to FIG. **4**, in addition to the service maintenance pages **340**, **360**, the web server **112** may also forward the compliance services recommendations to the pharmacy workstation **132** in a printable format at **230**. The pharmacist may print the printable version of the recommendations for the patient's review and use the printed version to guide the discussion as the pharmacist explains the different compliance services to the patient and explains the reasons why particular services were recommended. At **234** the pharmacist determines whether the patient agrees with the service recommendations and whether the patient wants to sign up to receive the recommended services. If so, the pharmacist saves the recommendations at **238** and the central processing systems **106** take the necessary steps to implement the recommended services on the patient's behalf. Otherwise, if the patient does not agree with the recommended service selections at **234**, the pharmacist may make adjustments to the selected services described above. Once the appropriate services have been selected, saved, and implemented, the pharmacist may print the patient's personal compliance solution guide at **240**. The personal compliance solution guide identifies and describes the various compliance services that have been activated for the patient. A confirmation page is displayed by the pharmacy workstation's web browser and the pharmacist confirms the patient's compliance service selections at **342**. After confirming the patient's selections, the process returns to **208** where the patient inquiry screen is displayed on the pharmacy workstation **132**, allowing the pharmacist to perform a patient lookup for the next patient.

[0073] FIG. **10** shows an example of a personalized solution guide **400**. The solution guide **400** may be printed in a columnar format on two sides of a single sheet of paper so that the solution guide may be folded in half to form a convenient four page brochure style document. The personal solution guide includes a cover page **402**. The cover page **402** includes the patient's name **404** and a title **406** identifying the document as the patient's Personalized Medication Management Solution Guide. The title page may also include the name of the pharmacy **408** offering the compliance services outlined in the solution guide **400**. The second page of the solution guide **400** is a summary page **410**. The summary page **410** includes summaries of the compliance services that have been selected and implemented on the patient's behalf. As can be seen in FIG. **10**, the patient Jane Q. Public **404** is enrolled in the Auto Fill service **412** and Text Message Refill Reminder Service **414**. The third page of the solution guide **400** is a compliance suggestion page **420**. The compliance suggestion page **420** includes basic tips **422** for staying in compliance with one's medication therapy. A short paragraph **424** at the bottom of the compliance suggestion page **420** indicates that

additional service offerings are listed on the final page of the solution guide **400**. The compliance suggestion page **420** further includes a block **426** where the pharmacist who conducted the consultation with the patient can add his or her personal contact information. As indicated, the final page of the solution guide **400** includes a comprehensive list **430** of the compliance services offered by the pharmacy. The solution guide may be printed with check marks next to the services that have already been selected for the patient. The list of compliance services found on the final page of the solution guide is substantially the same as the list of services **342** displayed on the second service maintenance page **360** of FIG. **9**. However, the list displayed for the pharmacist on the service maintenance page may be more comprehensive, including services that may be hidden from the patient's view.

[0074] Once a patient completes a consultation with the pharmacist and the recommended compliance services have been implemented, it is desirable to track the patient's compliance in order to determine whether the selected programs have had an effect on improving the patient's compliance, or whether additional or different services should be recommended to the patient to further improve the patient's compliance.

[0075] Patient feedback is itself a powerful tool for improving compliance. The medication management system **100** may be adapted to periodically generate a "compliance report card" for the patients participating in a medication management program. Returning briefly to FIG. **3**, in order to prepare a compliance report card for a particular patient the central processing systems **106** may pull data such as a patient's prescription fill history from the pharmacy's legacy data stores **152** and medication management data from the medication management transactional database **108**. These data may be used to create a report that evaluates the patient's compliance with his or her medication therapy program over a specific period of time. For example, a first compliance report card may be generated 90 days after a patient has had an initial compliance consultation with a pharmacist and subsequent report cards may be generated every six months thereafter. The first report card may cover a six month period beginning three months before the initial consultation and ending three months after the consultation in order to show whether the consultation with the pharmacist and the compliance services implemented as a result of the consultation have had a positive effect. A patient's compliance report card may be generated by the central processing systems **106** and forwarded to a pharmacy workstation by the medication management web server **112**. The report card may be printed by the pharmacist when the patient contacts the pharmacy on a date following the date on which the report card is scheduled to be issued. Alternatively, the report card may be generated automatically on the scheduled date and emailed to the patient, faxed, sent by regular mail, posted on a secure website which may only be accessed by the patient, the patient's caregiver, the patient's physician, or some other authorized party, or otherwise distributed to the patient.

[0076] Although a patient's compliance report card may be scheduled to be generated on a specific date, the report card need not actually be generated until it can be delivered to the patient. For example, the report card may not actually be generated until the patient contacts the pharmacy to get his or her prescriptions refilled after the date on which the report card is to be issued. On the date the report card is to be issued, a flag may be set in the patient's profile indicating that the compliance report card is due. The next time the patient contacts the pharmacy and the pharmacist performs a patient look up on the patient as described above, the central processing systems **106** will see that the generate report card flag is set and will take the necessary steps to pull the appropriate data and assemble the patient's compliance report card. Once assembled, the web server **112** sends the final document to the pharmacy workstation **132** where the pharmacist may print the report card and discuss its contents with the patient. Of course in other situations, such as when patients use online or mail order pharmacy services, it may be necessary to generate the patient's compliance report card on a date certain and forward it to the patient automatically over an appropriate communication channel, such as via email, a secure website, or the like.

[0077] FIG. **11** shows a sample compliance report card **500**. A cover page **502** identifies the report card and identifies the patient **516** for whom it is prepared. The cover page **500** may also identify the pharmacy **524** that prepared the report card. The second page **504** of the compliance report card **500** includes a set of instructions **526** for using the report card. The third page of the report card **506** includes the patient's personal information **530** including the patient's name, address, date of birth, sex and home phone number. A brief introductory paragraph **532** is followed by a summary of the patient's medical profile **534**. The medical profile includes the patient's current medications **536**; current allergies **538**; and current health conditions **540**. In the example shown, Jane Q. Public of 200 Wilmot Road, Deerfield, Ill. 12345, born Jan. 1, 1964, female, having the phone number (262) 867-5309 is actively taking Lipitor 10 mg tablets, ASA 81 mg tablets and Singulair 5 mg tablets. Ms. Public is allergic to Penicillin, Biaxin and Sulfa drugs. She currently suffers from elevated cholesterol and allergy induced asthma.

[0078] Medication possession ratio (MPR) is a measure of a patient's compliance with his or her medication therapy. A patient's medication possession ratio is defined as the number of days supply of medication that the patient has in his or her possession over a specified number of days divided by the specified number of days. The fourth page of the report card **508** includes a chart **550** illustrating the patient's medication possession over the period of time covered by the report card. The patient Jane Q. Public had a service intervention comprising a consultation with a pharmacist on March 1, **558**. The chart **550** extends from December 1, three months before the service intervention **558**, to June 1, three months after the service intervention **558**. The chart **550** shows the patient's medication possession **552**, **554**, **556** for each of her maintenance medications. As can be seen, a narrow gap **560** appears in her Lipitor possession graph **552** and a somewhat wider gap **562** appears in her Singulair possession graph **554**. No gaps appear in her ASA possession graph **556**. The gaps **560**, **562** indicate periods during which the patient was not in possession of her maintenance medications. Overall, the patient's MPR was 70% for Lipitor and 68% for Singulair. The patient was in possession of her ASA medication at all times, resulting in a 100% MPR for her ASA prescription. Both of the gaps **552**, **554** in the patient's possession of Lipitor and Singulair appear in the period of time before the service intervention **558**. It appears, based on a review of the patient's MPR, that the patient's compliance improved after the service consultation **558**.

[0079] The next page of the patient's compliance report card **500** is a questionnaire summary and update page **510**.

The questionnaire summary and update page **510** includes questions from the initial consultation questionnaire that the patient completed during her initial consultation with the pharmacist. The questions included on the questionnaire summary and update page **510** are selected based on the patient's answers during the initial consultation. Only the questions that were the most significant in terms of identifying the patient's compliance barriers are included in the compliance report card. The original questions **580**, **582**, **584** are restated, along with the patient's previous responses **586**, **588**, **590**. The patient is then asked how they would answer now? what has changed since the last consultation? what has made compliance better? what has made things worse? for each of the selected questions **580**, **582**, **584**.

[0080] The next page **512** of the patient's compliance report card **500** includes a list of possible goals **600** the patient may work towards before the next consultation with the pharmacist. The list of goals **600** may include a number of preselected goals or the pharmacist may simply check off those goals that he or she believes would be most beneficial for the patient to work to achieve in the weeks ahead.

[0081] Next, a health tips page **514** may include general health tips **610** or other ideas for the patient to keep in mind while managing her medications. This page may also include a section **612** for the patient to write notes or jot down questions that she may have for the pharmacist at their next meeting.

[0082] A final page **516** of the compliance report card **500** may provide a list **614** of the compliance related services offered by the pharmacy. This may provide the patient another opportunity to review the compliance services offered by the pharmacy and select additional services if desired. The list of services **614** on the compliance report card **500** may be substantially identical to the list of services included in the medication management Solutions Guide **400** given to the patient at the end of her initial consultation with the pharmacist.

[0083] If a patient selects the medication manager service, the medication management system prepares a customized medication management chart for helping the patient keep track of his or her medications. The medication management chart may be given to the patient when he or she picks up her medications, or in conjunction with a consultation with the pharmacist. Alternatively, medication management charts may be mailed to the patient, e-mailed, posted to a secure web cite, or otherwise delivered to the patient. A sample medication management chart **700** is show in FIG. **12**. The medication management chart **700** includes the patient's name and personal information **702**. The chart is organized as a series of rows **704**, **706** **708**, etc. Each of the patient's medications is listed on a separate row. In the example shown the patient is taking three different medications. Aciphex 20 mg tablets are listed in the first row **704**. Glipizide 10 mg tablets are listed in the second row **706**. An Intal Inhaler is listed on the third row **708**. The blank rows **712**, **814** may be used by the patient to record the use of other medications, such as over the counter drugs, vitamins, aspirin, and the like, or to record daily measurements such as blood pressure, glucose levels, and so forth. Each row that lists a medication **704**, **706**, **708** includes the name of the drug **716**, the form in which the drug is provided **718**, and a brief description of the medication's appearance or how it is packaged **720**. The instructions **722** for taking each medication are also included on each corresponding row.

[0084] Horizontally the chart **700** is divided into seven columns representing the seven days of the week. The headings of the columns **730**, **732**, **234**, **736**, **738**, **740**, **742** may be left blank so that the patient may begin the program on any day of the week that he or she sees fit. When the patient begins the program he or she can pencil in the days of the week beginning with the day on which he or she starts the program. Each column includes a number of check boxes **750** in each row. The check boxes in each column correspond to the individual doses of the medication listed on the corresponding row that the patient must take that day. Thus, if a particular medication is to be taken four times per day, four check boxes will appear in each column of the row listing the particular medication.

[0085] It is assumed that the patient will take each corresponding dose at or about the same time on each subsequent day. The first column **730** includes blank spaces **752** next to each check box **750** to allow the patient to write in the times he or she takes each dose, in order to customize his or her medication routine according to his or her own schedule. The patient may place a check mark in each box when he or she takes the corresponding dose each day. In this way, the patient may keep track of each dose of his or her medication to ensure that doses are not missed or that doses are accidentally taken twice. The chart **730** may further include spaces for the patient to write down notes for his or her doctor **760**, for the pharmacist **762**, and to list any side effects he or she is experiencing, or any other comments **764**.

[0086] If a patient selects a personalized medication record (PMR) service the medication management system may periodically prepare a personalized medication report. A PMR is a document that includes important information about the patient, the patient's health, and the patient's medication history. The patient may carry the PMR with them in case of emergency. Emergency personnel may refer to the PMR to learn about the patient's health status and so forth. The patient may show the PMR to his or her doctor to provide an overview of his or her health status, medication record, and so forth. A new PMR may be prepared for the patient each time the patient has a new prescription filled, or each time a prescription changes, and so forth. The patient may be provided with a protective sleeve or cover so that the patient may insert a copy of his or her PMR into the sleeve or cover each time the patient receives and updated version.

[0087] FIG. **13**. shows a sample PMR **800**. A cover page **802** identifies the document as a personalized medication record **804** and identifies the patient **806** for whom it is prepared. The cover page **802** may also identify the pharmacy **808** that prepared the PMR. The second page **810** includes a set of instructions **812** on how to use the PMR **800**. The next page **814** lists the patient's name and personal information **816**. This page may also include various medical and emergency information. For example the page **814** may include the patient's doctor's name and contact information **818**, the patient's pharmacy information **820**, emergency contact information **822**, current allergies **824**, and current health conditions **826**. A next page **830** may include a list of current medications **832**. Finally, a last page **840** may include a list of services **842** offered by the pharmacy with checkmarks indicating which services the patient currently receives.

[0088] Patients taking one or more maintenance medications for an extended period of time are the patients who would benefit most from a medication management program. A pharmacy implementing a medication management system

may rely on advertising and other efforts to get the word out to patients about the medication management services offered by the pharmacy. However, this requires patients to self identify themselves as candidates for medication management services, and requires patients to take the first step in seeking out such services. A more proactive approach is for the pharmacy to identify those of its patients who would benefit from a medication management program and take the active steps of contacting those patients and offering them medication management services. Therefore, an embodiment of a medication management system includes a point of sale (POS) blocking feature. According to this embodiment patients who may benefit from medication management services are identified and are blocked at the point of sale when having their prescriptions filled. Blocking the transaction allows a pharmacist to explain the pharmacy's medication management program to the patient and determine whether the patient may want to participate.

[0089] Returning again to FIG. **3**, the pharmacy front end systems **102** include one or more pharmacy workstations **132** and one or more POS terminals **138** located at retail branch stores **144**. The POS terminal **138** performs typical cash register functions and accounting functions related to the sale of prescription drugs. Both the pharmacy workstations **132** and the POS terminals **138** are connected to the in-store data network **134**. The in-store network **134** may be connected to an in-store application server **134** which connects to the pharmacy back-end systems **104** via an external network **130** as has already been described. The POS terminal **138** includes a small LCD screen or other type of display **140** for displaying messages to the pharmacist operating the POS terminal **138**. The POS terminal **138** further includes a bar code reader **140** for reading the bar codes on product packaging, including the bar codes on the packaging of prescription drugs prepared by the pharmacist to fill patient prescriptions.

[0090] When a patient comes to the pharmacy to have a prescription filled, the pharmacist pulls up the patient's profile on the workstation **132** as has been described. The pharmacist enters the prescription using the pharmacy legacy systems **150** and prepares the medications to fill the prescription. When the pharmacist enters the prescription, the patient profile is analyzed by the intervention engine **120** executed by the central processing systems **106**. The intervention engine **120** includes a number of rules for identifying patients who should be stopped at the point of sale when they attempt to pay for their medications. For example, a rule may be established to block all patients taking maintenance medications who are not participating in a medication management program. When the pharmacist enters the patient's prescription the intervention engine **120** analyzes the patient's profile, including the patient's prescription fill history, to determine whether the patient is taking maintenance medications and if so whether or not the patient is already participating in a medication management program. If the patient meets the conditions of the rule, the intervention engine **120** may issue a POS block by setting a flag in the patient's profile. The flag set in the patient profile indicates that the patient's transaction is to be blocked when the patient returns to pick up and pay for his or her medication.

[0091] Back at the pharmacy, the pharmacist prepares the patient's medication. The medication packaging includes a bar code identifying the prescription to which the medication relates. When the patient returns to pick up the medication the pharmacist scans the bar code on the medication packaging using the bar code reader **142**. The POS terminal **138** uses the information from the bar code to access the prescription data entered by the pharmacist and stored in the legacy system data stores **152**, and the corresponding patient profile. The patient profile includes the POS block flag that was set by the rules engine **118** when the prescription was entered by the pharmacist. The POS terminal **138** is barred from completing the transaction while the POS block flag is set. A message is displayed on the POS terminal's LCD display **140** indicating that the transaction has been blocked. The pharmacist returns to the pharmacy workstation **132** to learn the reason why the transaction was blocked. The pharmacist accesses the patient's profile and a message is displayed indicating that the transaction was blocked because the patient is a candidate for participating in a medication management program. The pharmacist may then consult with the patient, explaining the medication management program to the patient, and asking whether the patient would like to participate in the program. If so, the pharmacist enrolls the patient in the medication management program as has already been described. If not, the pharmacist records that a consultation has taken place but that patient declined to enroll in the medication management program. In either case, the desired message has been delivered to the patient and the POS block flag may be cleared in the patient's profile, and the patient's transaction for the purchase of his or her medications may proceed unhindered. If the patient declines to participate in the medication management program he or she may be blocked again on subsequent visits to the pharmacy unless and until the patient decides to enroll in the medication management program.

[0092] According to an embodiment of a medication management system, the POS blocking feature may be expanded to block patients at the point of sale for reasons other than making them aware of the pharmacy's medication management program. According to this embodiment patients sharing one or more common characteristics may be blocked at the point of sale until some specified action is taken. For example, campaigns may be implemented for contacting certain classes of patients in order to deliver messages directed toward the members of the various classes. Campaigns may provide customized interactions with the pharmacy's patients on behalf of the pharmacy itself or on behalf of third-party stakeholders.

[0093] Once enrolled in a campaign, a patient may be blocked during future visits to the pharmacy in order to deliver additional messages related to the campaign or to ensure that additional actions related to the campaign are carried out.

[0094] The pharmacy may implement campaigns as a paid service to third-party stakeholders. Stakeholders may be willing to pay the pharmacy for delivering messages to various groups of patients, gathering information from such patients or performing some other customized interaction with such patients. A customized interaction may include, for example, asking patients a series of questions related to their medication therapy and recording their responses. The medication management system data may provide the captured data to the third party who requested the campaign on a reimbursable basis. The captured data may be returned to the stakeholder in substantially any format desired. For example, the medication management system may generate customized reports on a periodic basis incorporating the cumulative responses of many patients, or the medication management system may forward patient responses to the third party stakeholder as soon as they are recorded. The reporting mechanism may be established on a case by case basis with the third party stakeholder who is requesting the campaign. The third party may be charged a flat fee for implementing a campaign, or may be charged individually for each patient interaction, or some other billing structure may be implemented.

[0095] According to an embodiment of a medication management system, a web-based campaign management tool is provided for creating and managing campaigns for identifying patients and taking actions directed toward identified patients. According to this embodiment campaigns include attributes and components. Table 1 describes the various campaign attributes according to an embodiment of a campaign management tool. Table 1 includes the attribute name, a description of the attribute and valid values that the attribute may take on.

TABLE 1

Campaign Attributes

Attribute	Description	Valid Values
1) Campaign ID	Unique; System Generated; Generated for every new campaign This is created upon saving the campaign.	This should always be unique
2) Campaign Name	Name of the campaign A campaign created from copy create will have as default file name "Copy of <Campaign Name>" but this can be edited The campaign name will include some attribute values	No data validation
3) Campaign Description	A brief description on what the campaign is about, target audience This should be a maximum of 500 characters	No data validation
4) Campaign Start Date	Can only be changed if the campaign has not been activated. Once active it can't be changed	When creating or activating a campaign it should be at least equal to the current date + 1 day and not later than the end date. Illustration: Creation Date is 1 Feb. 2007 Start Date should be equal or greater than 2 Feb. 2007
5) Campaign End Date	Can only be changed if the campaign has not been activated. Once active it can't be changed	When creating or activating a campaign it should not be earlier than the start date.
6) Campaign Priority	The priority will decide which campaign will be "offered" to the patient. This is reference point in case patient was hit by multiple campaigns	This can be numeric, descriptive (e.g., high, low), or whatever (yet to be defined)
7) Campaign Coordinator	This could be the name, department, an organization	No data validation
8) Campaign Coordinator Contact Details	This could be the phone number, email address just in case there would be some concerns on the campaign	No data validation
9) Cost		Mandatory field This should be in dollar
10) Expected Result		Mandatory text field No data validation
11) Campaign Status		Inactive, active, terminated, suspended, completed
12) Sponsor	Name of group, organization sponsoring the campaign	Optional text field No validation
13) Payor	Name of the company, organization funding the campaign	Optional text field No validation
14) Fee Structure		Optional text field No validation
15) Fee		Optional text field No validation
16) Billing		Optional text field No validation
17) Collect Billing Information		Optional text field No validation
18) Impact	This is just a text box. This is the probable number of patients that may be hit by the campaign	Optional text field. No validation
19) Implementation Procedure	This can be a 1,000-character text description of how the campaign will be implemented	Optional text field No validation

[0096] Table 2 describes the various components of a campaign according to an embodiment of a campaign management tool. Table 2 includes the component name and a brief description of the component.

TABLE 2

Campaign Components

Component Name	Description
1) Questions	Asking the patient a set of questions. The answer to the questions may or may not lead to service recommendation Not all campaigns will have this component The answers to the questions may not be limited to a range of ratings (1 to 7), but it can be "Yes" or "No," and other that's not numeric.
2) Services	The service may not necessarily be triggered by the questions. Illustration: Generate a report card for the patients on ABC medications. Not all campaigns will have this component. The service can be selected from the existing services defined in a Service table.
3) Rules for Identification	These are the rules that identify the type of patients for the campaign. A patient can be identified by anything on his profile including the campaign he/she participated in. This is a mandatory campaign component.
4) Reporting	Provides the ability to generate statistics related to the campaign
5) List Generation	This could be materials to educate the patient sent via mail. This could also be a list to call. Not all campaigns will have this component.
6) POS Block	The patient is blocked at the store upon dropping a script. Not all campaigns will have this component.
7) Termination	This is a constant component for all campaigns. This defines the process of terminating a campaign.
8) Information Page	Provides a text box where customized messages up to 4000 characters long may be defined.

[0097] Additional components may be defined as needed to meet the requirements of various third party stakeholders who wish to contact patients via the pharmacy's POS Block feature. In fact, a direct user interface feed may be provided to receive text messages or other customized interactions directly from the stakeholders to be included in a campaign.

[0098] Finally, components themselves may have attributes. Table 3 describes the various attributes that campaign components may include.

TABLE 3

Attributes of the Components

Attribute	Description
9) Frequency/ Schedule	This will define how often the component will happen in a campaign and when (start to end) Example: Send mailer every month to the patient for the next 6 months. Generate the report card every 2 months from the time the patient answered Question Set ABC. If the component is service-related and that service is not yet existing, the service has to be created in the Service Maintenance application first.
10) Campaign Scripting (Messaging)	This is the UI messaging. If it's a POS block scripting, this script will have to go to the campaign landing page in RCA. This attribute can be changed on the condition that the component for which this scripting is for has not started yet (start date is not yet reached).
11) Dependencies	This defines what triggers a component to happen; i.e., answers to the questions, report card printing, etc.

[0099] Once a campaign has been defined it may assume one of many different statuses. Table 4 describes the various statuses a campaign may acquire. Table 4 lists each status, a description of each status and the business rules that follow from a campaign having a corresponding status.

TABLE 4

Campaign Status

Status	Definition	Business Rules on the Status
Inactive	The campaign has not been activated	Default campaign status Modifications allowed This can be deleted
Active	The campaign has been activated even if the start date is still on a later time.	Modifications not allowed after activation If the campaign is activated on a later date than the start date, require new start date. Cannot be deleted Can be suspended, terminated, completed
Suspended	The campaign is temporarily stopped with the intention of resuming	Modifications not allowed If the end date was reached and campaign is still suspended the campaign will automatically be terminated Cannot be deleted Can be reactivated. Once reactivated it will be active again
Terminated	The campaign is permanently stopped before the end date	Modifications now allowed Cannot be deleted Cannot be reactivated
Completed	The campaign has reached the end date and the status of the campaign is active or suspended	Modifications not allowed The campaign will take on the completed status a day after the end date Cannot be deleted Cannot be "reactivated"

[0100] FIG. **14** is a flow chart **850** showing the campaign management definition process flow according to an embodiment of a campaign management tool. The campaign management definition begins at **852**. A campaign may be defined from scratch or may be created by modifying an existing campaign. At **854** a determination is made whether the campaign will be a new campaign or based on an existing campaign. If the campaign is to be based on an existing campaign a search for the existing campaign may be performed at **856** and the attributes and components of the existing campaign may be edited to meet the requirements of the new campaign. Otherwise if the campaign is a new campaign, the attributes of the new campaign are defined at **858**. The components of the new campaign are defined at **860**, and the transitions between the various components are defined at **862**. A determination is made at **864** whether or not to activate the campaign. If the campaign is not to be activated the campaign's status is set to inactive at **866**. Otherwise, the campaign is activated at **868**. A determination is made at **870** whether to create another campaign. If yes, the process returns to **858** where attributes of the next campaign are defined and so forth. If not, the application is closed and the process flow ends at **872**.

[0101] FIG. **15** shows a campaign attributes interface page **900** for defining or editing the attributes of a campaign. The interface page **900** is part of the campaign management tool, and may be sent to an administrator workstation **140** by the medication management web server **112** (FIG. **3**). The interface page **900** includes a number of attribute fields where a user defining a new campaign or editing an existing campaign may enter or change attribute values. Attribute fields are included for entering the campaign name **902**; a description of the campaign **904**; the campaign priority **906**; the name of a campaign coordinator **908**; a campaign sponsor **910**; a fee structure **912**, a billing structure **914**; the cost of the campaign **916**; the campaign status **918**; the campaign start date **920**; the campaign end date **922**; an expected result **924**; the campaign coordinator's contact information **926**; the party paying for the campaign **928**; the fee **930**; and billing **932**.

[0102] FIG. **16** shows a campaign components interface page **950** for defining the components of a campaign. The upper portion **952** of the interface page **952** includes a summary of the campaign attributes entered in the attributes interface page **900** of FIG. **15**. The bottom portion **954** of the campaign components interface page **950** includes a number of data fields for entering campaign components and related data. A campaign must include at least two components. Generally, these will include a patient identification rule, and some other step. For example, the second step may be delivering a specified message, asking one or more questions of the patient, or some other customized interaction. The campaign components interface page **950** includes data fields for defining the component type **956**, the component ID **958**, the component start date **960** and the component end date **962**. The component type data fields **956** may include drop-down menus **964** from which a user may select the component type for a particular component. The component types listed in the drop-down menu may correspond to the components listed in Table 2. The component ID fields **958** may also include drop-down menus **966** for selecting specific components to be included in the campaign. The component IDs included in the component ID drop-down menu may depend on the type of component selected in the corresponding component type field **956**. The campaign start date and campaign end date fields **960**, **962** allow the user to enter the dates during which the corresponding component will be active.

[0103] Finally, FIG. **17** shows a campaign component transition interface page **970**. The campaign component transi-

tion interface page **970** allows the user to define the transitions between the campaign components selected in the campaign component interface page **950** of FIG. **16**. On the campaign component transition interface page **970** the user may select a source component **972** and a destination component **974**, and a rule **976** for governing the transition from the source component **972** to the destination component **974**. Three conditional transitions **978**, **980**, **982** are shown in the sample campaign component transition interface page **970**. The first two transitions **978**, **980**, **982** define transitions from the same source component **972**, namely, LIPITOR, MALE, 45 AND ABOVE, to different destination components **974** depending on different conditions defined by the corresponding rules **976** defined in each transition **978**, **980**. In the first transition **978**, the campaign will transition from the LIPITOR, MALE, 45 AND ABOVE source component **985** to the disease state block component **986**. The transition may be based, for example, on the cumulative score of the patient's responses to a set of questions that form the customized interaction implemented by the campaign. The first transition occurs if the result is greater than seventy **992**. In the second transition, from the LIPITOR, MALE, 45 AND ABOVE source component **987** to the report card question set component **988** occurs if the result is less than seventy **994**. Finally, in the third transition **982**, the campaign will transition from the report card question set source component **989** to the refill reminder-phone component **990** if the result is equal to seventy **996**.

[0104] Once a campaign has been defined, the campaign management tool interacts with the intervention engine **120** to load the rules for identifying the patients who are the targets of the campaign. Once a campaign has been implemented, the POS block feature works as described above. When a patient contacts the pharmacy to have a prescription filled, the pharmacist accesses the patient's profile and enters the prescription using the pharmacy's legacy systems. The patient's profile is run against the intervention engine **120** to determine whether the patient has the characteristics of the patients targeted by the campaign. If so, an intervention flag is set in the patient's profile. When the patient picks up his or her prescription at the pharmacy, the transaction is blocked at the point of sale by the POS terminal. The POS terminal may display a message indicating that the transaction has been blocked and directing the pharmacist to the pharmacy workstation **132** to learn why the patient was blocked. Upon accessing the patient profile, the pharmacy workstation receives an interface page from the web server **112** that includes a message describing the reason why the patient was blocked as well as the actions that must be taken regarding the patient in furtherance of the campaign. Once the appropriate actions have taken place the intervention flag may be reset in the patients profile, and the transaction allowed to proceed.

[0105] As an example, a campaign may be established for providing patients with detailed information about a new medication the first time they have a prescription for the new medication filled. When a patient drops off a prescription for the new medication at the pharmacy the patient's profile is run against the intervention engine **120**. The intervention engine may include a rule associated with the campaign for blocking patients the first time they have a prescription for the new medication filled. In this case, if it is the first time the patient is filling a prescription for the new drug, the patient's profile will meet the condition defined by the rule, and the intervention flag will be set in the patient's profile. When the patient picks up his or her prescription, the pharmacist scans the barcode on the prescription packaging, and the POS terminal accesses the patient's profile data. Since the intervention flag is set, the POS terminal will block the transaction and direct the pharmacist to the pharmacy workstation **132**. At the pharmacy workstation **132** the pharmacist accesses the patient's profile. An interface page is sent from the medication management web server **112** indicating the reason why the patient was blocked. The pharmacist may then conduct a scripted interaction with the patient based on the particular campaign for which the patient was blocked.

[0106] The scripted interaction with the patients may be guided by campaign interface pages sent from the medication management web server **112** to the pharmacy workstation **132**. The interface pages associated with a campaign comprise three basic components, an Information page, a Question Set page and a Thank You page. FIGS. **18**, **19** and **20** show an Information page **1000**, a Question Set page **1020**, and a Thank You page **1040**, respectively. The Information page **1000** identifies the patient **1002**, includes basic patient information **1004** (address, phone number, etc.) and includes a scripted message **1006** for determining whether the patient is in fact a patient having the characteristics of patients targeted by the campaign and whether the patient would be willing to discuss his or her medication therapy. The question set page **1020** includes scripted questions **1022**, **1024** associated with the campaign. The pharmacist asks the patient the questions and records the patient's answers by selecting the appropriate radio buttons **1026**, **1028**, **1030**, **1902**. In this case, the first question **1022** is merely to confirm that the present prescription fill is the first time the patient has had a prescription for the new medication. The second question is whether the patient would like to receive additional information about the prescribed medication. If the patient answers "yes" to both of these questions, additional information about the medication may be provided to the patient. In either case, once the questions have been asked, and the patient's answers recorded, the required patient level tasks associated with the campaign have been completed with regard to the patient and the intervention flag in the patient's profile may be reset. Once the intervention flag has been reset the POS block is removed and the patient's transaction may be completed. When the pharmacist has entered the patient's answers to the questions the Thank You page **1040** is displayed. The Thank You page may be merely a scripted message **1042** that the pharmacist reads to the patient thanking the patient for participating in the campaign.

[0107] Another example of a campaign that may lead to a POS block may relate to periodic tests required of patients taking certain medications. For example, a certain side effect may be associated with a particular drug. Patients taking the drug may be required to take a blood test after a certain period of time to ensure that the negative side effects are not present. A campaign may be established for blocking patients after the defined time period to check whether they have had the required blood test. In this case, a patient taking the medication may be blocked at the point of sale until the patient produces evidence that the requisite blood test has been performed and the results were consistent with continuing to take medication in question.

[0108] In yet another embodiment the pharmacy may receive a data feed directly from third party stakeholders identifying patients to be blocked at the point of sale as part of a customized interaction campaign. For example, an insur-

ance company may want to contact all of its patients taking a particular drug to inform them of a cheaper generic equivalent. The insurance company may already know the identity of all the patients in question. The insurance company may feed the list of names to the pharmacy, and a POS block may be established for every name on the list for which the pharmacy has a customer profile. Individual patients on the list may be identified and blocked at the point of sale as has already been discussed, and the appropriate message delivered to the patient at the pharmacy by the pharmacist.

[0109] An advantage of a comprehensive medication management system is that a great deal of information about a patient and a patient's medication therapy may be made easily accessible to a pharmacist or other health-care professional. According to an embodiment of a medication management system, a patient's medication data are organized and displayed on an interface in a manner that provides a pharmacist with quick and easy access to all or most of the patient information that the pharmacist needs to perform an informed consultation with a patient. According to this embodiment, the consultation manager **110** may display a consolidated patient profile interface on each page of a web-based consultation interface. FIG. **21**, for example, shows a minimized patient chart **1100** displayed along with a service maintenance page **1102**. FIG. **22** shows an expanded full-screen view **1110** of the consolidated patient profile. If desired, a pharmacist may expand the minimized patient chart **1100** into the full-screen view **1110** from any consultation interface page (e.g., from a medication management report card consultation page, a script alignment interface page, and the like) provided by the consultation manager **110**.

[0110] The consolidated patient profile interface, either the minimized version **1100** (FIG. **21**) or the full-screen view **1110** (FIG. **22**), includes a number of user selectable tabs **1114**, **1116**, **1118**, **1120** for selecting the type of patient data displayed on the consolidated patient profile interface **1100**, **1110**. The Interactions Tab **1114** causes a list **1122** of all of the interactions that have taken place between the patient and the pharmacy to be displayed. The list **1122** displays the date on which the interaction occurred **1124**, the type of interaction **1126**, the subject of the interaction **1128**, the location (i.e., branch store) at which the interaction occurred **1130** and an overview **1132** of what transpired during the interaction. A detail link **1134** is provided for each interaction. A detail link **1134** links to an interface page that includes additional details about the corresponding interaction.

[0111] FIG. **23** shows a full-screen view of a consolidated patient profile **1140** with the Drugs Tab **1116** selected. The Drugs Tab **1116** causes a list **1142** of all of the patient's medications to be displayed. When applicable, the list includes the prescription number **1144** associated with each drug purchase, the name of the drug **1146**, the last date **1148** the drug was sold to the patient, and the store **1150** at which the drug was sold.

[0112] FIG. **24** shows a full-screen view of a consolidated patient profile **1160** with the Allergies and Health Conditions Tab **1118** selected. The Allergies and Health Conditions Tab **1118** causes a list of the patient's current allergies **1162** and a list of the patient's current health conditions **1164** to be displayed.

[0113] Finally, FIG. **25** shows a full-screen view of a consolidated patient profile **1170** with the Services Tab **1120** selected. The Services Tab **1120** causes a list **1172** of the pharmacy services that are currently active in the patient's profile to be displayed. Thus, the web-based consolidated patient profile interface pages shown in FIGS. **21-25** provide the pharmacist with ready access to a wealth of patient information that may be relied on by the pharmacist when the pharmacist is consulting with a patient.

[0114] The interface pages displaying the consolidated patient profile may be provided with additional or different display tabs to display additional patient data or patient data that is organized in a different manner, as necessary to provide pharmacists with all of the patient data needed to perform thorough and complete consultations with their patients. Furthermore, patient data from a consolidated patient profile may be made accessible to the patient, the patient's caregiver, the patient's physician or some other authorized party, by posting the consolidated patient profile to a secure website, or otherwise making the data available on a protected basis to the patient and other authorized parties.

[0115] Many of the services offered to patients as part of a comprehensive medication management program will require individual pharmacists to perform certain tasks. For example, an auto-refill service will require a pharmacist to prepare the prescriptions that are automatically being refilled. Preferably the prescriptions will be prepared by a pharmacist at the local branch store where the patient typically has his or her prescriptions filled. Similarly, for patients who have signed up to receive personal calls when their prescription refills are due, or past due, or when their prescriptions are ready, a pharmacist must be tasked with placing the call. Again, it is preferable that the pharmacist who places the call is a pharmacist at a branch store where the patient typically has his or her prescriptions filled.

[0116] According to an embodiment of a medication management system **100** (see FIG. **3**) the task list generator **124** periodically performs batch processes to identify patients who are receiving services that require some action to be taken over a specified period of time. The task list generator identifies the tasks that must be performed (e.g., re-filling specific prescriptions, placing re-fill reminder telephone calls, and so forth) and identifies the various branch stores or other locations where it is most appropriate for the various tasks to be performed. The task list generator then prepares lists of tasks to be performed at the various branch stores or other locations. Individualized task list interface pages may be sent from the medication management web server **112** to the pharmacy workstations **132** at the various branch stores and other locations where the tasks are to be performed. The pharmacists at the various branch stores and other locations may review the individualized task list for his or her location, and perform the various tasks described on the individualized task list interface page as part of his or her daily responsibilities.

[0117] FIG. **26** shows an example of a pharmacist task list interface page **1200**. The task list interface page **1200** may be divided between a pharmacist schedule **1202** and a pharmacist task list **1204**. On the pharmacist schedule **1202** portion of the pharmacist task list interface page **1200** individual tasks **1206**, **1208** are scheduled for specific times of the day they are to be performed. Thus, the pharmacist reviewing the pharmacist task list interface page **1200** will know that at 10:00 on May 1st, he or she must place a refill reminder call **1206** to patient Marie L. Johnson. At 10:30 that day, the pharmacist is scheduled to have a diabetes follow-up consultation **1208** with patient Steven R. Smith. Each scheduled task, **1206**, **1208** includes the time **1209** for which the task is

scheduled, a description of the task **1210**, the name of the patient associated with the task **1212**, the patient's primary phone number **1214**, and the status of the task.

[0118] The lower portion **1204** of the pharmacist task list interface page **1200** merely shows a list of unscheduled tasks that must be performed. The pharmacist may perform each task on an ad hoc basis as time allows throughout the day without regard to a specified time. Each task listed in the list **1204** includes the type of interaction **1218**, a description of the task **1220**, a task due date **1222**, the source or service that generated the task **1224**, the priority assigned to the task **1226**, and the status of the task **1228**. The pharmacist task list interface page **1230** further includes a create new task button **1230** that allows the pharmacist to add new tasks to the list.

[0119] By implementing a medication management system as described herein, a pharmacy may better serve its patients by providing services that will help patients improve their compliance with their individual mediation therapies. The pharmacy may also provide valuable services to the broader medical services delivery community by providing access to patients heretofore unavailable to third party stakeholders. Such services may be provided in a setting that will improve the pharmacy's relations with its customers while opening new potentially lucrative revenue streams based on providing reimbursable cognitive services to the third party stakeholders.

[0120] While the preceding paragraphs describe several exemplary embodiments of a prescription alignment system, the various embodiments described are not intended to limit the invention to the individual embodiments. Various aspects of the alternate embodiments may be combined in varying ways to create the system and method that best suits the pharmacy implementing the system and method, the pharmacy's customers, and the regulatory environment in which the pharmacy operates

1. A system for facilitating consultations between pharmacists and a pharmacy's customers, the system comprising:

a database storing patient data;

a plurality of pharmacy work stations;

a processor programmed to execute a consultation manager application configured to pull patient data from the database to populate one or more patient summary interface pages with patient data corresponding to an identified patient, the one or more patient summary pages including a prescription fill history detailing prescriptions filled by the pharmacy for the identified patient; and

a web server configured to send the one or more patient summary interface pages to the pharmacy workstations over a network.

2. The system of claim **1**, wherein the prescription fill history includes at least one of: a prescription number; a drug name; a dosage; a date sold; or a location at which a prescription was filled, for each prescription the pharmacy has filled for the patient over a period of time.

3. The system of claim **1**, wherein the data populating the one or more patient summary interface pages further include an interaction history detailing the patient's interactions with the pharmacy, the interaction history including at least one of: a date on which an interaction took place; an interaction type; a subject of an interaction; a location where an interaction took place; or a summary of a result of an interaction.

4. The system of claim **1** wherein the data populating the one or more patient summary interface pages comprise a summary of the patient's current allergies and health conditions.

5. The system of claim **1** wherein the data populating the one or more patient summary interface pages comprise a list of compliance assistance services provided by the pharmacy to the patient.

6. The system of claim **1** wherein the one or more patient summary interface pages include interactive tabs for selecting a desired view of the patient data.

7. The system of claim **6** wherein the interactive tabs include at least one of: a tab for displaying an interaction history detailing the patient's interactions with the pharmacy; a tab for displaying a prescription history detailing the patient's medication purchases from the pharmacy; a tab for displaying a list of the patient's known allergies and current health conditions; or a tab for displaying a list of compliance assistance services being provided by the pharmacy to the patient.

8. The system of claim **1** wherein the consolidated patient view interface pages are configured to be displayed in a partial screen view in which the consolidated patient view pages are displayed along with other interface pages associated with a medication management system.

9. A user interface system to display patient medication data to facilitate a consultation between a pharmacist at a pharmacy and a patient, the interface comprising:

a processor programmed to execute a consultation manager application configured to pull patient data from a database to populate patient specific interface pages;

a web-server configured to send the patient specific interface pages over a network; and

a pharmacy workstation executing a web browser application configured to receive and display the patient specific interface pages on a display device associated with the pharmacy workstation, the patient specific interface pages providing a comprehensive view of the patient's medication history and interactions with the pharmacy.

10. The user interface system of claim **9** wherein the patient data populating the patient specific interface pages comprise an interaction history detailing the patient's interactions with the pharmacy, and a patient specific interface page displayed by the workstation includes at least one of: a date on which an interaction took place; a type of interaction; a subject of an interaction; a location where an interaction took place; or a summary of a result of an interaction.

11. The user interface system of claim **9** wherein the patient data populating the patient specific interface pages comprise a prescription fill history detailing the prescriptions that the pharmacy has filled for the patient, and a patient specific interface page displayed by the workstation includes at least one of: a prescription number; a drug name; a dosage; a date sold; or a location where a prescription was filled.

12. The user interface system of claim **9** wherein the data populating the patient specific interface pages comprise a summary of the patient's current allergies and health conditions, and a patient specific interface page displayed by the work station includes the patient's current allergies and health conditions.

13. The user interface system of claim **9** wherein the data populating the patient specific interface pages comprise a list of compliance assistance services provided to the patient, and

a patient specific interface page displayed by the workstation includes the list of services provided to the patient.

14. The user interface of claim **9** wherein the patient specific interface pages include interactive tabs for selecting desired views of the patient data, the interactive tabs including at least one of: a tab for displaying an interaction history detailing the patient's interactions with the pharmacy; a tab for displaying a prescription fill history detailing the patient's medication purchases from the pharmacy; a tab for displaying a list of the patient's known allergies and current health conditions; and a tab for displaying a list of compliance assistance services being provided to the patient by the pharmacy.

15. The user interface of claim **9** wherein the patient specific interface pages are configured to be displayed in a partial screen view in which the consolidated patient view pages are displayed along with other interface pages associated with a medication management system.

16. A method of providing a patient's medication data to a pharmacist conducting a consultation with the patient, the method comprising:

storing patient medication data in a database, including a history of the patient's interactions with the pharmacy, a history of prescriptions filled by the pharmacy for the patient, and the services provided to the patient by the pharmacy;

preparing interactive user interface pages for displaying patient medication data;

populating the interactive user interface pages with the patient's medication data stored in the database; and

displaying the interactive user interface pages on an interface display device, the interactive user interface pages including an interactions page detailing the patient's interactions with the pharmacy, a prescription fill history page detailing the prescriptions filled by the pharmacy for the patient, and a patient services page detailing the services provided to the patient by the pharmacy.

17. The method of claim **16** wherein the interactions page includes at least one of: a date on which an interaction occurred; a type of interaction that occurred; a medication to which an interaction related; a location where an interaction took place; or a summary of what took place during the course of an interaction.

18. The method of claim **16** wherein the prescription fill history page includes at least one of: a prescription number associated with a prescription; a name of a drug associated with a prescription; a last date on which a drug associated with a prescription was sold to the patient; or a store location from which a prescription was filled.

19. The method of claim **16** wherein storing medication data in the database comprises storing the patient's current allergies and health conditions, and wherein preparing interactive user interface pages for displaying patient medication data includes preparing an interactive user interface page displaying the patient's current allergies and health conditions.

20. The method of claim **16** wherein displaying the interactive user interface pages includes displaying a plurality of user selectable tabs whereby a user may select different categories of patient medication data to be displayed on the interface display device, the user selectable tabs including at least one of: a tab for displaying the interactions page; a tab for displaying the prescription fill history page; a tab for displaying the patient services page; or a tab for displaying a patient's current allergies and health conditions.

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