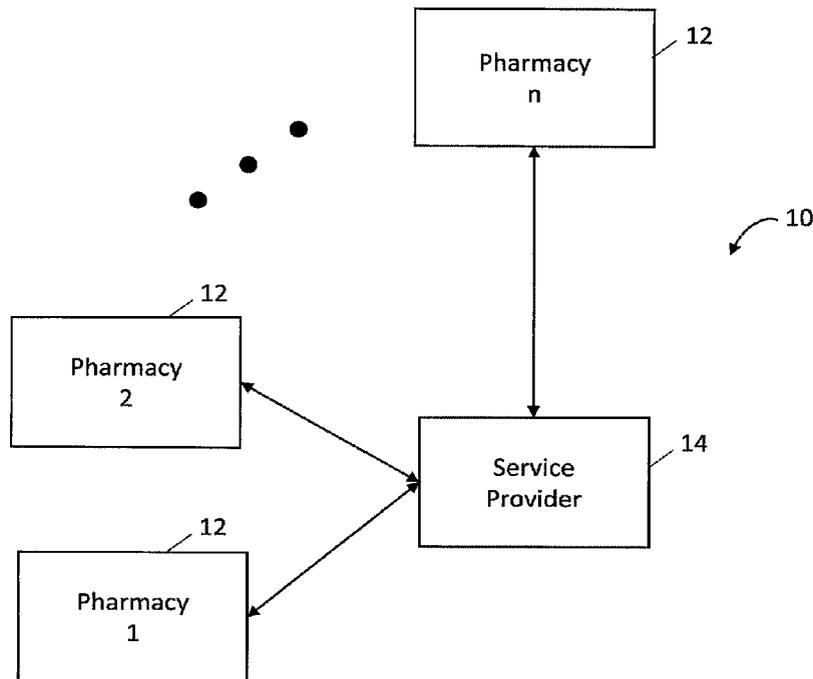




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MISUSE



(57) **Abrégé/Abstract:**

A system, method, apparatus and computer program product are provided to identify potential prescription drug misuse. In the context of a method, data is received relating to a prescription drug claims transaction and the data is then parsed to identify a patient and a prescription drug from the prescription drug claims transaction. The method determines whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. If the prescription drug is included in the subset, the method determines whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse. If so, the method causes a notification to be provided, such as by causing an alert to be provided to the pharmacy that submitted the prescription drug claims transaction.



ABSTRACT

A system, method, apparatus and computer program product are provided to identify potential prescription drug misuse. In the context of a method, data is received relating to a prescription drug claims transaction and the data is then parsed to identify a patient and a prescription drug from the prescription drug claims transaction. The method determines whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. If the prescription drug is included in the subset, the method determines whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse. If so, the method causes a notification to be provided, such as by causing an alert to be provided to the pharmacy that submitted the prescription drug claims transaction.

METHOD, APPARATUS AND COMPUTER PROGRAM PRODUCT FOR
IDENTIFYING POTENTIAL DRUG MISUSE

TECHNOLOGICAL FIELD

[0001] An example embodiment relates generally to a system, method, apparatus and computer program product for identifying potential prescription drug misuse and, more particularly, to the evaluation of prescription drug claims transactions of a patient to identify potential prescription drug misuse.

BACKGROUND

[0002] Prescription drug misuse has increasingly become an issue. Prescription drug misuse may take the form of a patient obtaining and taking more prescription drugs than recommended by a healthcare provider or by a patient obtaining more prescription drugs than the patient requires and then further distributing or selling the additional prescription drugs to other people in an unauthorized and unregulated manner. While prescription drug misuse is disfavored for all classes of prescription drugs, prescription drug misuse of opioids is a particular concern, both because of the addictive nature of opioids and the sometimes severe consequences associated with a patient taking more opioids than recommended by a healthcare provider or by opioids being taken by people to whom the opioids were not prescribed due to the unauthorized distribution of the opioids by the patient to the other people.

[0003] Access to prescription drugs is regulated to some degree by the requirement that a patient must be prescribed the prescription drug by a healthcare provider and that the resulting prescription must be filled by a licensed pharmacy. In some instances, however, patients may obtain prescriptions for an excessive amount of prescription drugs, such as by obtaining prescriptions for the prescription drug from a number of different healthcare providers that in the aggregate amount to an excessive amount of the prescription drug or by obtaining false or forged prescriptions for the prescription drug.

[0004] In an instance in which a patient obtains prescriptions for an excessive amount of a prescription drug, presentment by the patient of all of the prescriptions to a single pharmacy may result in the pharmacy identifying that the prescriptions in the aggregate amount to an excessive amount of the prescription drug and the pharmacy may only partially fill the prescriptions such

that the patient is limited to the maximum amount of the prescription drug that the patient is authorized to obtain. However, a patient may present different ones of the prescriptions to different pharmacies such that no one pharmacy is asked to fill prescriptions for more of the prescription drugs than the patient is authorized to receive. In some jurisdictions, the pharmacies operate relatively independently in relation to the fulfillment of prescriptions. Moreover, prescriptions are filled in at least some situations in a relatively real-time manner, thereby making it challenging to process manually, particularly in light of the number of prescriptions filled at a myriad of pharmacies every day. Thus, in these jurisdictions in which the pharmacies operate relatively independently, the patient may be capable of obtaining an excessive amount of prescription drugs including an excessive amount of opioids from the plurality of pharmacies even though no one pharmacy provided an unauthorized quantity of prescription drugs.

BRIEF SUMMARY

[0005] A system, method, apparatus and computer program product are provided in accordance with an example embodiment in order to identify potential prescription drug misuse. The method, apparatus and computer program product of an example embodiment evaluate the prescriptions of the patient that have been filled at any of one or more pharmacies to identify whether those prescriptions of the patient satisfy criteria indicative of potential prescription drug misuse. Thus, potential prescription drug misuse is identified even in instances in which a patient presents prescriptions for fulfillment at a variety of different pharmacies and even in an instance in which the prescriptions of the patient filled at any one particular pharmacy are within the authorized limits and do not satisfy the criteria indicative of potential prescription drug misuse. In an instance in which potential prescription drug misuse is identified, a notification, such as an alert, may be provided, such as to the pharmacy and/or the healthcare provider prescribing the prescription drug, such that appropriate intervention with the patient may be instituted prior to filling the prescription.

[0006] The system, method, apparatus and computer program product provide a number of technical advantages. For example, although all prescription drugs could be monitored for potential misuse, the method, apparatus and computer program product of an example embodiment provide a technical advantage by being tailored to only monitor a subset of prescription drugs for potential misuse, such as the subset of prescription drugs that are addictive, that may cause the most deleterious effects if taken in an unregulated manner or the

like. In this example embodiment, the method, apparatus and computer program product do not merely create and store a prescription drug record for a prescription drug that is included within the subset of prescription drugs to be monitored for potential misuse, but, instead, provide an additional technical advantage by creating a prescription drug record and/or storing the resulting prescription drug record within a database in such a manner that the prescription drug record for the prescription drug that is included in the subset of prescription drugs to be monitored for potential misuse is distinguishable and identifiable relative to the prescription drug records created and stored for prescription drugs that are not included in the subset of prescription drugs to be monitored for potential misuse.

[0006a] In one embodiment, there is provided a system configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, the system comprising: a database of prescription drug claims transactions; and a service provider computing device of a claims processor configured to process prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, the service provider computing device comprising: a communication interface configured to receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request; and processing circuitry configured to: parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions; determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse; and only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for the database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential

prescription drug misuse, wherein the communication interface is configured, in response to a determination by the processing circuitry that the criteria indicative of the potential prescription drug misuse is satisfied, to cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

[0006b] In another embodiment, there is provided a method implemented by a service provider computing device that is configured for processing prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the method comprises: receiving data via a communication interface relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request; parsing the data with processing circuitry to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions; determining by the processing circuitry whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse; only in an instance in which the prescription drug is included in the subset, monitoring for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determining by reference by the processing circuitry to the database whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, causing an electronic notification to be provided via the communication interface to a pharmacy that submitted the respective prescription drug claims transaction.

[0006c] In a further embodiment, there is provided an apparatus of a service provider computing device configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the apparatus comprises at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the processor, cause the apparatus to at least: receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request; parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions; determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse; only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

[0006d] In yet a further embodiment, there is provided a non-transitory computer-readable storage medium of a service provider computing device having computer-executable program code instructions stored therein that are configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor

configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the computer-executable program code instructions comprise program code instructions configured to: receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request; parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions; determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse; only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

[0007] In an example embodiment, a system is provided that is configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse. The system includes a database of prescription drug claims transactions, a communication interface configured to receive data relating to a prescription drug claims transaction and processing circuitry. The processing circuitry is configured to parse the data to identify a patient and a prescription drug from the prescription drug claims transaction and to determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. The processing circuitry is also configured, in an instance in which the prescription drug is included in the subset, to formulate a search query for the database of prescription drug claims transactions based upon the

patient and the prescription drug identified from the prescription drug claims transaction and to determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse. The communication interface is also configured, in response to a determination by the processing circuitry that the criteria indicative of the potential prescription drug misuse is satisfied, to cause a notification to be provided to a pharmacy that submitted the prescription drug claims transaction.

[0008] The processing circuitry of an example embodiment is configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the

prescription drug from the prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse. The one or more prescriptions of the patient related to the prescription drug may include one or more prescriptions of the patient for a prescription drug of a same class of prescription drugs as the prescription drug from the prescription drug claims transaction that has been received. At least one of the one or more prescriptions of the patient related to the prescription drug may include a prescription of the patient for a different prescription drug than the prescription drug from the prescription drug claims transaction that has been received. In this example embodiment, the different prescription drug and the prescription drug from the prescription drug claims transaction that has been received are within the same class of prescription drugs.

[0009] The processing circuitry of an example embodiment is further configured, in an instance in which the prescription drug is included in the subset, to create a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction and to store the prescription drug record in the database. The processing circuitry of this example embodiment is also configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by accessing, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions. The processing circuitry may be further configured to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

[0010] In an example embodiment, a computer-implemented method is provided for processing prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse. The method includes receiving data via a communication interface relating to a prescription drug claims transaction and parsing the data with processing circuitry to identify a patient and a prescription drug from the prescription drug claims transaction. The method also determines by the processing circuitry whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. In an instance in which the prescription drug is included in the subset, the method formulates a search query for a database of prescription drug claims transaction based upon the patient and the prescription drug identified from the prescription drug claims transaction and determines by reference by the processing circuitry to the database whether

prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse. In an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, the method causes an electronic notification to be provided by the communication interface, such as by causing an alert to be provided to the pharmacy that submitted the prescription drug claims transaction.

[0011] The method of an example embodiment determines whether the prescriptions for the patient related to the prescription drug satisfy the criteria by determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse. In an example embodiment, one or more prescriptions of the patient related to the prescription drug include one or more prescriptions of the patient for a prescription drug of the same class of prescription drugs as the prescription drug from the prescription drug claims transaction that has been received. Thus, at least one of the one or more prescriptions of the patient related to the prescription drug may include a prescription of the patient for a different prescription drug than the prescription drug from the prescription drug claims transaction that has been received. However, the different prescription drug and the prescription drug from the prescription drug claims transaction that has been received are within the same class of prescription drugs.

[0012] In an instance in which the prescription drug is included in the subset, the method of an example embodiment creates a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction and stores the prescription drug record in a database. In this embodiment, the method determines whether the prescriptions for the patient related to the prescription drug satisfy the criteria by accessing, from the database, one or more prescription drug records of the patient associated with the one or more prescription drug claims transactions. The method of this example embodiment may also include associating the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

[0013] In another example embodiment, an apparatus is provided that is configured to process prescription drug claims transactions from a plurality of pharmacy computers operative

in a network to identify potential prescription drug misuse. The apparatus includes at least one processor and at least one memory including computer program code with the at least one memory and the computer program code configured to, with the processor, cause the apparatus to at least receive data relating to a prescription drug claims transaction and to parse the data to identify a patient and a prescription drug from the prescription drug claims transaction. The at least one memory and the computer program code are also configured to, with the processor, cause the apparatus to determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. In an instance in which the prescription drug is included in the subset, the at least one memory and the computer program code are further configured to, with the processor, cause the apparatus to formulate a search query for a database of prescription drug claims transaction based upon the patient and the prescription drug identified from the prescription drug claims transaction and determine by reference by the processing circuitry to the database whether prescriptions of the patient that are related to the prescription drug satisfy criteria indicative of potential prescription drug misuse. In an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, the at least one memory and the computer program code are further configured to, with the processor, cause the apparatus to cause an electronic notification to be provided, such as by causing an alert to be provided to the pharmacy that submitted the prescription drug claims transaction.

[0014] The at least one memory and the computer program code are configured to, with the processor, cause the apparatus of an example embodiment to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse. In an example embodiment, the one or more prescriptions of the patient related to the prescription drug include one or more prescriptions of the patient for a prescription drug of the same class of prescription drugs as the prescription drug from the prescription drug claims transaction that has been received. As such, at least one of the one or more prescriptions of the patient related to the prescription drug may include a prescription of the patient for a different prescription drug than the prescription drug from the prescription drug claims transaction that has been received. However, the different prescription drug and the

prescription drug from the prescription drug claims transaction that has been received are within the same class of prescription drugs.

[0015] The at least one memory and the computer program code are further configured to, with the processor, cause the apparatus of an example embodiment to create, in an instance in which the prescription drug is included in the subset, a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction and to store the prescription drug record in a database. The at least one memory and the computer program code are configured to, with the processor, cause the apparatus of this example embodiment to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by accessing, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions. The at least one memory and the computer program code are further configured to, with the processor, cause the apparatus to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

[0016] In a further example embodiment, a computer program product is provided that is configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse. The computer program product includes at least one non-transitory computer-readable storage medium having computer-executable program code instructions stored therein with the computer-executable program code instructions including program code instructions configured to receive data relating to a prescription drug claims transaction and to parse the data to identify a patient and a prescription drug from a prescription drug claims transaction. The computer-executable program code instructions also include program code instructions configured to determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. In an instance in which the prescription drug is included in the subset, the computer-executable program code instructions further include program code instructions configured to formulate a search query for a database of prescription drug claims transaction based upon the patient and the prescription drug identified from the prescription drug claims transaction and determine by reference by the processing circuitry to the database whether prescriptions of the patient related to the prescription drugs satisfy criteria indicative of potential prescription drug misuse. In an instance in which the criteria indicative of the potential for

prescription drug misuse is satisfied, the computer-executable program code instructions additionally include program code instructions configured to cause an electronic notification to be provided, such as by causing an alert to be provided to a pharmacy that submitted the prescription drug claims transaction.

[0017] The program code instructions of an example embodiment that are configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria include program code instructions configured to determine whether one or more prescriptions of the patient related to the prescription drug from one or more prior drug claims transactions in combination with the prescription drug from the prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse. In this example embodiment, the one or more prescriptions of the patient related to the prescription drug include one or more prescriptions of the patient for a prescription drug of the same class of prescription drugs as a prescription drug from the prescription drug claims transaction that has been received. In this example embodiment, at least one of the one or more prescriptions of the patient related to the prescription drug includes a prescription of the patient for a different prescription drug than the prescription drug from the prescription drug claims transaction that has been received. However, the different prescription drug and the prescription drug from the prescription drug claims transaction that has been received are within the same class of prescription drugs.

[0018] The computer-executable program code instructions of an example embodiment also include program code instructions configured to create, in an instance in which the prescription drug is included in the subset, a prescription drug record including at least the patient and the prescription drug of the prescription drug claims transaction and to store the prescription drug record in the database. In this example embodiment, the program code instructions configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria further include program code instructions configured to access, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions. The computer-executable program code instructions of this example embodiment may also include program code instructions configured to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Having thus described certain embodiments of the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0020] Figure 1 is a block diagram of one example of a system for submitting and evaluating prescription drug claims transactions in order to identify potential prescription drug misuse in accordance with an example embodiment;

[0021] Figure 2 is a block diagram of an apparatus that may be specifically configured in order to identify potential prescription drug misuse in accordance with an example embodiment;

[0022] Figure 3 is a flow chart illustrating operations performed, such as by the apparatus of Figure 2, in order to identify potential prescription drug misuse in accordance with an example embodiment; and

[0023] Figure 4 is a representation of a database including a file containing patient records and a file containing prescription drug records that may be accessed in conjunction with the identification of potential prescription drug misuse in accordance with an example embodiment.

DETAILED DESCRIPTION

[0024] The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the inventions are shown. Indeed, these inventions may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

[0025] A system, method, apparatus and computer program product are provided in accordance with an example embodiment in order to identify potential prescription drug misuse. As described below, the system, method, apparatus and computer program product are configured to identify potential prescription drug misuse even in an instance in which a patient presents prescriptions for the prescription drug for fulfillment at a number of different pharmacies including pharmacies that otherwise operate relatively independently, at least in regard to the fulfillment of prescriptions. The system, method, apparatus and computer program product of an example embodiment may be configured to identify potential prescription drug misuse for any of a wide variety of different prescription drugs. In an example embodiment,

however, the system, method, apparatus and computer program product are configured to identify potential prescription drug misuse for the class of prescription drugs that includes opioids since the deleterious impact of potential prescription drug misuse of prescription drugs in the class that includes opioids can have devastating consequences and further, since prescription drugs in the same class as opioids can be addictive.

[0026] Although the method, apparatus and computer program product of an example embodiment may be deployed in a variety of different systems, one example of a system 10 in which the method, apparatus and computer program product for identifying potential prescription drug misuse are deployed is depicted in Figure 1. As shown, the system includes a plurality of pharmacies 12 at which prescriptions may be fulfilled, such as Pharmacy 1, Pharmacy 2, ... Pharmacy n in the embodiment of Figure 1. In relation to the fulfillment of prescriptions and interaction with the patients, the pharmacies may operate in a coordinated manner or in a relatively autonomous manner. However, pharmacy computers of the pharmacies (hereinafter collectively referenced as “pharmacies”) of this embodiment of a system are configured to create and provide prescription drug claims transactions via a network to a service provider 14, such as a claims processor or other form of service provider that processes and stores the prescription drug claims transactions, such as a service provider that pre-edits the prescript drug claims transactions prior to providing the prescription drug claims transactions to a claims processor for evaluation and/or that provides various other value-added services. The claims processor may be associated with a payor, such as an insurance company, a governmental entity or the like, and may be configured to evaluate prescription drug claims transactions in order to determine the financial responsibility for the prescription drug claims transaction, such as the financial responsibility of the patient, the financial responsibility of the payor or the like.

[0027] Various types of prescription drug claims transactions may be provided by a pharmacy 12 and processed by a service provider 14 including, for example, a prescription claim request, medical claim request, predetermination of benefits request or the like. In this regard, a predetermination of benefits request solicits information, such as information indicative of the amount that the patient will be required to pay for a prescription drug in advance of the submission of a prescription claim request or a medical claim request seeking reimbursement of the patient, such as following fulfillment of and payment for the prescription drug.

[0028] As shown, even in an embodiment in which the system 10 includes a plurality of pharmacies 12, such as a plurality of pharmacies that operate independently in relation to the fulfillment of prescriptions, the pharmacies of an example embodiment submit prescription drug claims transactions to a common service processor 14 for processing and/or evaluation. Since the plurality of pharmacies submit prescription drug claims transactions to a common service processor, the service processor may be configured in accordance with an example embodiment in order to evaluate the prescription drug claims transactions from one or more pharmacies in order to identify potential prescription drug misuse based on prescriptions filled at the one or more pharmacies, such as in an instance in which the prescriptions filled at a plurality of pharmacies may represent potential prescription drug misuse in the aggregate even though the prescriptions filled at any one pharmacy would not, in and of itself, represent potential prescription drug misuse.

[0029] In accordance with an example embodiment, an apparatus 20 is provided that is specifically configured to identify potential prescription drug misuse. The apparatus of this example embodiment may be embodied by a computing device, such as a server, a computer workstation, one or more distributed computers or the like. In an example embodiment, the apparatus is associated with the service provider 14 of the system 10 of Figure 1 and, as such, may be embodied by a switch or a router and may be configured to interact with a plurality of pharmacies 12 and, more typically, a plurality of pharmacy management systems utilized by the plurality of pharmacies in order to submit prescription drug claims transactions to the service provider. Although the apparatus may be configured in various manners, the apparatus of an example embodiment may be embodied as shown in Figure 2 so as to include, be in association with or otherwise be in communication with processing circuitry 22 that is configurable to perform actions in accordance with example embodiments described herein. The processing circuitry may be configured to perform data processing, application execution and/or other processing and management services. The processing circuitry may include at least one processor and may, in one embodiment, be in communication with or otherwise control a memory 24, a communication interface 26 and a database 28. The apparatus may also include the communication interface and the database as shown in Figure 2, or the communication interface and/or the database may be separate from, but in communication with, the apparatus.

[0030] In an example embodiment, the memory 24 may include one or more non-transitory memory devices such as, for example, volatile and/or non-volatile memory that may be either fixed or removable. The memory may be configured to store information, data, applications, instructions or the like for enabling the apparatus 20 to carry out various functions in accordance with example embodiments of the present invention. For example, the memory could be configured to buffer input data for processing by the processing circuitry 22. Additionally, or alternatively, the memory could be configured to store instructions for execution by the processing circuitry.

[0031] The processing circuitry 22 may be embodied in a number of different ways. For example, the processing circuitry may be embodied as various processing means such as at least one processor that may be embodied by one or more of a microprocessor or other processing element, a coprocessor, a controller or various other computing or processing devices including integrated circuits such as, for example, an ASIC (application specific integrated circuit), an FPGA (field programmable gate array), or the like. In an example embodiment, the processing circuitry may be configured to execute instructions stored in the memory 24 or otherwise accessible to the processing circuitry. As such, whether configured by hardware or by a combination of hardware and software, the processing circuitry may represent an entity (e.g., physically embodied in circuitry – in the form of processing circuitry) specifically configured to perform operations according to embodiments of the present invention while configured accordingly. Thus, for example, when the processing circuitry is embodied as an ASIC, FPGA or the like, the processing circuitry may be specifically configured hardware for conducting the operations described herein. Alternatively, as another example, when the processing circuitry is embodied as an executor of software instructions, the instructions may specifically configure the processing circuitry to perform the operations described herein.

[0032] The communication interface 26 may include one or more interface mechanisms for enabling communication with the pharmacies 12 and/or a claims processor, such as one or more input/output (I/O) interfaces. In this regard, the communication interface may include, for example, an antenna (or multiple antennas) and supporting hardware and/or software for enabling the communications therewith.

[0033] The database 28 may be embodied by any of a variety of data storage devices such as a Network Attached Storage (NAS) device or devices, or as a separate database server or servers.

The database includes information accessed and stored by the processing circuitry 22 to facilitate the operations of the service provider 14. For example, the database may comprise a plurality of files storing patient records and prescription drug records as described below.

[0034] The operations performed, such as by the apparatus 20 of Figure 2, in accordance with an example embodiment are depicted in Figure 3, such as from the perspective of the service provider 14. As shown in block 30 of Figure 3, the apparatus includes means, such as the processing circuitry 22, the communication interface 26 or the like, configured to receive data relating to a prescription drug claims transaction. The data relating to the prescription drug claims transaction that is received may be the prescription drug claims transaction itself, such as a predetermination of benefits request, a prescription claim request, a medical claim request or the like. However, in some embodiments, the prescription drug claims transaction is processed prior to receipt by the apparatus and data relating to the prescription drug claims transaction is provided to the apparatus even though the prescription drug claims transaction itself is not provided.

[0035] As shown in block 32 of Figure 3, the apparatus 20 also includes means, such as the processing circuitry 22 or the like, configured to parse the data relating to the prescription drug claims transaction so as to identify the patient and the prescription drug from the prescription drug claims transaction. In this regard, the prescription drug claims transaction may include a plurality of fields organized in a predefined manner. These fields include, among other parameters, data that identifies the patient and data that identifies the prescription drug. The patient may be identified in various manners including, for example, the name of the patient, a patient identification number, such as may be uniquely assigned to a patient in some jurisdictions, such as Canada or the like, and/or combinations of other information related to the patient, such as the address of the patient, the date of birth of the patient and the like.

[0036] Although different types of prescription drug claims transactions may include different fields, the request of one example embodiment includes the following fields:

Purchase plan identifier - Payor ID / Routing Information

- o BIN Number (*i.e.* Banking Identification Number); BIN Number and Processor Control Number (PCN); BIN Number and Group ID; BIN Number, PCN and Group ID; BIN Number, PCN, Group ID, and Cardholder ID (of purchaser); BIN

Number, PCN, Group ID, Cardholder ID (of purchaser), Relationship Code (of purchaser), and Person Code (of purchaser); and/or BIN Number, PCN, Group ID, Cardholder ID (of purchaser), Relationship Code (of purchaser), Person Code (of purchaser), Purchaser Date of Birth, and Purchaser Gender that designates a destination of the request

Purchaser Information

- Name (*e.g.* Purchaser Last Name, Purchaser First Name, etc.)
- Date of Birth of Purchaser
- Gender of Purchaser
- Purchaser Address (*e.g.* Street Address, Zip Code, etc.)
- Purchaser Contact Information (*e.g.* purchaser telephone number, email address, etc.)
- Purchaser ID or other identifier (*e.g.*, driver's license number, social security number, Health Insurance Claim Number (HICN), etc.)

Purchase Plan Information

- Cardholder Name (*e.g.* Cardholder First Name, Cardholder Last Name)
- Cardholder ID and/or other identifier (*e.g.* person code)
- Group ID and/or Group Information

Transaction Type

- Transaction Type Code (*e.g.*, product purchase request (*e.g.*, billing transaction), reversal transaction, e-script transaction, benefits determination request)

Prescriber of the Product Information

- Prescriber ID or other identifier (*e.g.* prescriber code)
- Prescriber Name (*e.g.* Last Name, First Name)
- Prescriber Contact Information (*e.g.* Telephone Number)

Merchant Information

- Merchant Information (*e.g.* store name, store address, chain identifier, etc.)
- Merchant ID (*e.g.* merchant code)

Product Information

- Product information – Product or service identifier (*e.g.* product code, UPC code, NDC code, etc.), product or service name, etc.

- Purchase Reference Number
- Quantity of Product to be Dispensed
- Days' Supply of the Product Purchased
- Pricing information for the product or service (*e.g.* ingredient cost (*e.g.*, in an Ingredient Cost field), dispensing fee (*e.g.*, in a Dispensing Fee field), gross amount due (*e.g.*, in a Gross Amount Due field), and Usual and Customary Charge amount (*e.g.*, in a Usual and Customary Charge field))
- Number of Refills Authorized
- Fill Number (*i.e.*, the current refill number for the current request)
- Transaction Submission Date of the Request (the original date that the Request was electronically submitted to the claims processor).

[0037] In an example embodiment, the apparatus 20 includes means, such as the processing circuitry 22 or the like, to determine whether the patient record exists for the patient identified from the prescription drug claims transaction. See block 34 of Figure 3. As shown generally in Figure 2 and more particularly in Figure 4, the apparatus may include or otherwise be associated with or in communication with a database 28 that includes a file 60 storing patient records. Each patient record is associated with a patient for which a prescription drug claims transaction has been submitted to the service provider 14. Although a patient record may include a variety of different information related to the patient, the patient record of an example embodiment includes one or more of a patient identification number, the first name of the patient, the last name of the patient, the date of birth of the patient, the gender of the patient and/or the address of the patient. In an instance in which the apparatus, such as the processing circuitry, determines that a patient record has not previously been created for the patient associated with a prescription drug claims transaction that is being evaluated, the apparatus includes means, such as the processing circuitry or the like, for creating a patient record, such as in the file of patient records maintained by the database. See block 36 of Figure 3. As noted above, the patient record that is created includes information regarding the patient that uniquely identifies the patient and, in one embodiment, includes information identifying the patient that is parsed from the data related to the prescription drug claims transaction that was received.

[0038] In an instance in which a patient record already exists for the patient associated with the prescription drug claims transaction or in an instance in which a patient record has been created for the patient associated with the prescription drug claims transaction, the apparatus 20 includes means, such as the processing circuitry 22 or the like, configured to determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse. See block 38 of Figure 3. Although all prescription drugs could be monitored for potential misuse, the apparatus of an example embodiment provides a technical advantage by being tailored to only monitor a subset of prescription drugs for potential misuse, such as the subset of prescription drugs that are addictive, that may cause the most deleterious effects if taken in an unregulated manner or the like. For example, the apparatus could be configured to monitor prescription drug claims transactions for opioids, but not for prescription drug claims transactions for prescription drugs other than opioids. By evaluating only a subset of prescription drugs for potential misuse, the apparatus of this example embodiment can more efficiently process the prescription drug claims transactions, such as by processing the prescription drug claims transactions in a more timely manner and in a manner that consumes fewer processing resources since the prescription drug claims transactions for prescription drugs that are not included in the subset of prescription drugs to be monitored for misuse need not be subjected to the additional processing described herein to which prescription drug claims transactions for prescription drugs that are included in the subset of prescription drugs to be monitored for misuse are subjected.

[0039] The apparatus 20, such as the processing circuitry 22, may be configured to determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse in various manners. In this regard, the subset of prescription drugs to be monitored for potential misuse may be defined in various manners. In one embodiment, for example, a list of prescription drugs to be monitored for potential misuse is maintained, such as by the memory 24, the database 28, the processing circuitry or the like. In some embodiments, the list of prescription drugs to be monitored for potential misuse may include a list of all of the prescription drugs themselves to be monitored for potential misuse. In another embodiment, the list of prescription drugs to be monitored for potential misuse may include a list of one or more classes of prescription drugs to be monitored for potential misuse either with or without listing the individual prescription drugs of each class.

[0040] In an instance in which the prescription drug from the prescription drug claims transaction is not included in the subset of prescription drugs to be monitored for potential misuse, the prescription drug claims transaction may be processed in a conventional manner. For example, the apparatus 20, such as the processing circuitry 22, the memory 24, the database 28 or the like, may be configured to create a prescription drug record indicative of the prescription drug that is the subject of the prescription drug claims transaction. See block 40 of Figure 3. The prescription drug record may include various information identifying or associated with the prescription drug including the patient to which the prescription drug was prescribed, such as may be identified by the patient identification number, the date that the prescription was filled, the date that the prescription was submitted, the quantity of the prescription drug, the days supply of the prescription drug, information identifying the pharmacy, such as the pharmacy identifier (ID), information identifying the prescriber of the prescription drug, such as the prescriber ID and a link to the patient record stored by the database that is associated with the patient to whom the prescription drug claims transaction relates. The apparatus, such as the processing circuitry, the database or the like, may also be configured to cause the resulting prescription drug record to be stored by the database, such as by a file 62 of prescription drug records maintained by the database. See block 42 of Figure 3.

[0041] The apparatus 20, such as the processing circuitry 22, of this example embodiment is also then configured to process the prescription drug claims transaction, such as in a conventional manner. See block 44 of Figure 3. The apparatus, such as the processing circuitry, the communication interface 26 or the like, may also be configured to cause a response to the prescription drug claims transaction to be provided as shown in block 46. In some embodiments, the apparatus, such as the processing circuitry, creates and stores a prescription drug record and then causes a response to be transmitted to the pharmacy that submitted the prescription drug claims transaction indicating of receipt and storage of the prescription drug claims transaction. In other embodiments, however, the prescription drug claims transaction may be processed, such as to identify the amount that the patient will be required to pay for the fulfillment of the prescription, such as in an instance in which the prescription drug claims transaction is a predetermination of benefits request or to submit the prescription drug claims transaction to a payor, such as an insurance company, for reimbursement of the patient or the pharmacy 12 for fulfillment of the prescription. In these embodiments, the apparatus, such as the processing

circuitry, may be configured to interact with a claims processor and is configured to not only cause a response to be provided to the pharmacy indicative of the receipt and storage of the prescription drug claims transaction, but also to provide information following processing of the prescription drug claims transaction.

[0042] In an instance in which the apparatus 20, such as the processing circuitry 22, determines that the prescription drug of the prescription drug claims transaction is included in a subset of prescription drugs to be monitored for potential misuse, the apparatus includes means, such as the processing circuitry, the database 28 or the like, configured to create a prescription drug record and cause the resulting prescription drug record to be stored, such as in the database, in the manner described above. See blocks 48 and 50 of Figure 3. In an example embodiment, the apparatus, such as the processing circuitry, provides technical advantages by not merely creating and storing a prescription drug record for a prescription drug that is included within the subset of prescription drugs to be monitored for potential misuse, but, instead, creates a prescription drug record and/or stores the resulting prescription drug record within the database in such a manner that the prescription drug record for the prescription drug that is included in the subset of prescription drugs to be monitored for potential misuse is distinguishable and identifiable relative to the prescription drug records created and stored for prescription drugs that are not included in the subset of prescription drugs to be monitored for potential misuse. As such, prescription drug records for prescription drugs that are included in the subset of prescription drugs to be monitored for potential misuse may be readily and efficiently identified during subsequent analysis, thereby conserving processing and memory resources and reducing processing time in comparison to instances in which all of the prescription drug records stored by the database would need to be evaluated. The prescription drug records for prescription drugs included in the subset of prescription drugs to be monitored for potential misuse may be identified in various manners including by the inclusion of a flag, a tag or other identifier within the prescription drug record itself and/or by the storage of a prescription drug record for prescription drugs included in the subset of prescription drugs to be monitored for potential misuse not only within the file 62 of prescription drug records maintained by the database, but within a subfile 64 of the file of prescription drug records that is configured to store only those prescription drug records for prescription drugs included in the subset of prescription drugs to be monitored for potential misuse.

[0043] In an instance in which the prescription drug is determined to be within the subset of prescription drugs to be monitored for potential misuse and after having created the prescription drug record and stored the prescription drug record in the database 28, the apparatus 20 of an example embodiment includes means, such as the processing circuitry 22 or the like, configured to formulate a search query for the database of prescription drug claims transaction based upon the patient and the prescription drug identified from the prescription drug claims transaction and to determine by reference to the database, such as by searching the database based upon the search query, as to whether prescriptions of the patient (that is, the patient associated with the prescription drug claims transaction that is being evaluated) related to the prescription drug that have been filled at any of one or more pharmacies 12, such as prescriptions of the patient filled at a plurality of different pharmacies, satisfy criteria indicative of potential prescription drug misuse. See block 52 of Figure 3. In an example embodiment, the apparatus, such as the processing circuitry, is configured to determine whether the prescriptions of the patient related to the prescription drug satisfy the criteria by initially accessing the prescription drug records stored by the database for the same patient, such as by accessing the prescription drug records stored by the database that are linked or otherwise associated with the same patient with which the prescription drug claims transaction under evaluation is related.

[0044] Of the prescription drug records for the same patient, the apparatus 20, such as the processing circuitry 22, is configured to evaluate the prescription drug record related to the prescription drug that is the subject of the prescription drug claims transaction. While the apparatus, such as the processing circuitry, of an example embodiment is configured to evaluate the prescription drug records of the patient for the exact same prescription drug that is the subject of the prescription drug claims transaction under evaluation, the apparatus, such as the processing circuitry, of an example embodiment is configured to evaluate prescriptions of a patient that are related to the prescription drug so as to identify not only prescriptions for the exact same prescription drug as the prescription drug claims transaction under evaluation, but any prescription of the patient for a prescription drug within the same class of prescription drugs as the prescription drug that is the subject of the prescription drug claims transaction that is currently being evaluated. In this example embodiment, the prescription drug records may also include a parameter identifying the class of prescription drug and/or the memory 24 may store a list of prescription drugs that form each of a plurality of different classes of prescription drugs

such that the apparatus, such as the processing circuitry, is configured to identify the other prescription drugs of the same class as the prescription drug that is associated with the prescription drug claims transaction under evaluation.

[0045] For example, the prescription drug claims transaction may relate to one particular opioid. However, the apparatus 20, such as the processing circuitry 22, of an example embodiment may be configured to identify the prescription drug records for the patient related to any prescription drug within the class of prescription drugs that includes the particular opioid that is the subject of the prescription drug claims transaction under evaluation since potential drug misuse may involve the use of not only the particular opioid identified by the prescription drug claims transaction under evaluation, but the fulfillment of prior prescriptions for any of a variety of opioids of the same class. Thus, in some embodiments, at least one or more prescriptions of the patient that are related to the prescription drug and are identified and evaluated for purposes of determining whether the prescriptions satisfy criteria indicative of potential prescription drug misuse include a prescription of the patient for a different prescription drug, then the prescription drug of the prescription drug claims transaction that is currently being evaluated. In this embodiment, however, the different prescription drug and the prescription drug from the prescription drug claims transaction that is currently being evaluated are within the same class of prescription drugs.

[0046] The criteria indicative of potential prescription drug misuse may be defined in various manners. For example, the criteria may be defined in terms of the quantity of the same prescription drug or the quantity of prescriptions drugs of the same class that have obtained by the same patient from any the one or more pharmacies 12, such as within a predefined period of time preceding the current date and time. In some embodiments, the criteria may also take into account the number of different pharmacies at which the prescriptions have been fulfilled, the number of different prescriptions fulfilled or the like with an increase in the number of pharmacies at which the prescriptions are fulfilled and/or an increase the number of prescriptions that are fulfilled being more indicative of potential misuse.

[0047] The apparatus 20, such as the processing circuitry 22, of an example embodiment is configured to weight the prescriptions of the patient related to the prescription drug in various manners and to then determine whether the prescriptions satisfy the criteria by evaluating the weighted impact of the prescriptions in conjunction with the satisfaction, or not, of the criteria

indicative of the potential prescription drug misuse. For example, in some embodiments in which the prescription drug records that are evaluated for potential misuse include prescription drug records of different prescription drugs from within the same class of prescription drugs, the apparatus, such as the processing circuitry, may be configured to weight the prescriptions for the different prescription drugs differently depending upon various factors related to the prescription drugs, such as the deleterious effects caused by abuse of the prescription drug, the addictive nature of the prescription drug, and/or the inter-drug interactions associated with the prescription drug or the like. Thus, prescriptions for prescription drugs that are more addictive, cause more deleterious effects and/or create stronger drug-drug interactions may be weighted more greatly than prescriptions for other drugs that are less addictive, cause less deleterious effects and/or create fewer drug-drug interactions. Other factors that may be taken into account by the apparatus, such as the processing circuitry, in relation to weighting the different prescriptions may include the time at which the prescriptions were fulfilled, such as with older prescriptions being weighted more lightly than more recent prescriptions.

[0048] In an instance in which the criteria indicative of potential prescription drug abuse is not satisfied, the apparatus 20, such as the processing circuitry 22, is configured in an example embodiment to process the prescription drug claims transaction in a conventional manner as described above, such as in conjunction with blocks 44 and 46 of Figure 3. However, in an instance in which the criteria indicative of the potential prescription drug abuse is satisfied, the apparatus includes means, such as the processing circuitry, the communication interface 26 or the like, configured to cause an electronic notification to be provided. See block 54 of Figure 3. Although a variety of electronic notifications may be provided, the apparatus, such as the processing circuitry, of an example embodiment is configured to provide an electronic notification in the form of an alert to the pharmacy 12 that submitted the prescription drug claims transaction. This alert identifies for the pharmacy that fulfillment of the prescription by the patient would satisfy the criteria indicative of potential prescription drug misuse such that the pharmacist may intervene. Such intervention may take many forms including a declination by the pharmacy to fulfil the prescription and/or counseling by the pharmacist as to the dangers associated with misuse of the prescription drug. Additionally or alternatively, the intervention may include the referral of the patient to a program, such as a counseling program, designed to inform the patient as to the dangers associated with misuse of the prescription drug and/or the

referral of the patient to the healthcare provider who wrote the prescription such that the healthcare provider can determine if the patient could alternatively be prescribed a different prescription drug in order to address the symptoms exhibited by the patient, but in a manner that would not create the potential for prescription drug misuse. In addition to or instead of notifying the pharmacy, the apparatus, such as the processing circuitry, the communication interface or the like, may cause the electronic notification, such as an alert, to be provided to the healthcare provider who wrote the prescription that is the subject of the prescription drug claims transaction.

[0049] As described above, a method, apparatus 20 and computer program product are provided in order to identify potential prescription drug misuse by evaluating the prescriptions of the patient that have been filled at any of one or more pharmacies including prescriptions filled at a plurality of different pharmacies. Thus, potential prescription drug misuse is identified even in instances in which a patient presents prescriptions for fulfillment at a variety of different pharmacies and even in an instance in which the prescriptions of the patient filled at any one particular pharmacy are within the authorized limits and do not satisfy the criteria indicative of potential prescription drug misuse. In an instance in which potential prescription drug misuse is identified, an electronic notification, such as an alert, may be provided, such as to the pharmacy and/or the healthcare provider prescribing the prescription drug, such that appropriate intervention with the patient may be instituted prior to filling the prescription.

[0050] As noted above, Figure 3 is a flowchart illustrating the operations performed by a method, apparatus 20 and computer program product in accordance with one embodiment of the present invention. It will be understood that each block of the flowchart, and combinations of blocks in the flowchart, may be implemented by various means, such as hardware, firmware, processor, circuitry and/or other device associated with execution of software including one or more computer program instructions. For example, one or more of the procedures described above may be embodied by computer program instructions. In this regard, the computer program instructions which embody the procedures described above may be stored by a memory 24 of an apparatus employing an embodiment of the present invention and executed by processing circuitry 22 of the apparatus. As will be appreciated, any such computer program instructions may be loaded onto a computer or other programmable apparatus (e.g., hardware) to produce a machine, such that the resulting computer or other programmable apparatus provides

for implementation of the functions specified in the flowchart blocks. These computer program instructions may also be stored in a non-transitory computer-readable storage memory that may direct a computer or other programmable apparatus to function in a particular manner, such that the instructions stored in the computer-readable storage memory produce an article of manufacture, the execution of which implements the function specified in the flowchart blocks. The computer program instructions may also be loaded onto a computer or other programmable apparatus to cause a series of operations to be performed on the computer or other programmable apparatus to produce a computer-implemented process such that the instructions which execute on the computer or other programmable apparatus provide operations for implementing the functions specified in the flowchart blocks. As such, the operations of Figure 3, when executed, convert a computer or processing circuitry into a particular machine configured to perform an example embodiment of the present invention. Accordingly, the operations of Figure 3 define an algorithm for configuring a computer or processing circuitry, e.g., processor, to perform an example embodiment. In some cases, a general purpose computer may be provided with an instance of the processor which performs the algorithms of Figure 3 to transform the general purpose computer into a particular machine configured to perform an example embodiment.

[0051] Accordingly, blocks of the flowchart support combinations of means for performing the specified functions and combinations of operations for performing the specified functions. It will also be understood that one or more blocks of the flowchart, and combinations of blocks in the flowchart, can be implemented by special purpose hardware-based computer systems which perform the specified functions, or combinations of special purpose hardware and computer instructions. In some embodiments, certain ones of the operations above may be modified or further amplified and additional optional operations may be included. It should be appreciated that each of the modifications, optional additions or amplifications below may be included with the operations above either alone or in combination with any others among the features described herein.

[0052] Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the inventions are not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the

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appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

CLAIMS

1. A system configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, the system comprising:

a database of prescription drug claims transactions; and

a service provider computing device of a claims processor configured to process prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, the service provider computing device comprising:

a communication interface configured to receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request; and

processing circuitry configured to:

parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions;

determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse; and

only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for the database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse,

wherein the communication interface is configured, in response to a determination by the processing circuitry that the criteria indicative of the potential prescription drug misuse is

satisfied, to cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

2. The system according to claim 1 wherein the processing circuitry is configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the respective prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse.

3. The system according to claim 2 wherein the one or more prescriptions of the patient related to the prescription drug comprise one or more prescriptions of the patient for a prescription drug of a same class of prescription drugs as the prescription drug from the respective prescription drug claims transaction that has been received.

4. The system according to claim 3 wherein at least one of the one or more prescriptions of the patient related to the prescription drug comprises a prescription of the patient for a different prescription drug than the prescription drug from the respective prescription drug claims transaction that has been received, and wherein the different prescription drug and the prescription drug from the respective prescription drug claims transaction that has been received are within the same class of prescription drugs.

5. The system according to any one of claims 2 to 4 wherein the processing circuitry is further configured to:

in an instance in which the prescription drug is included in the subset, create a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction; and

store the prescription drug record in the database, and

wherein the processing circuitry is configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by accessing, from the database,

one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions.

6. The system according to claim 5 wherein the processing circuitry is further configured to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

7. A method implemented by a service provider computing device that is configured for processing prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the method comprises:

receiving data via a communication interface relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request;

parsing the data with processing circuitry to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions;

determining by the processing circuitry whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse;

only in an instance in which the prescription drug is included in the subset, monitoring for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determining by reference by the processing circuitry to the database whether prescriptions of the patient related to the prescription drug that have been

filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and

in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, causing an electronic notification to be provided via the communication interface to a pharmacy that submitted the respective prescription drug claims transaction.

8. The method according to claim 7 wherein determining whether the prescriptions for the patient related to the prescription drug satisfy the criteria comprises determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the respective prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse.

9. The method according to claim 8 wherein the one or more prescriptions of the patient related to the prescription drug comprise one or more prescriptions of the patient for a prescription drug of a same class of prescription drugs as the prescription drug from the respective prescription drug claims transaction that has been received.

10. The method according to claim 9 wherein at least one of the one or more prescriptions of the patient related to the prescription drug comprises a prescription of the patient for a different prescription drug than the prescription drug from the respective prescription drug claims transaction that has been received, and wherein the different prescription drug and the prescription drug from the respective prescription drug claims transaction that has been received are within the same class of prescription drugs.

11. The method according to any one of claims 8 to 10 further comprising:
in an instance in which the prescription drug is included in the subset, creating a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction; and
storing the prescription drug record in the database, and

wherein determining whether the prescriptions for the patient related to the prescription drug satisfy the criteria further comprises accessing, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions.

12. The method according to claim 11 further comprising associating the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

13. An apparatus of a service provider computing device configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the apparatus comprises at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the processor, cause the apparatus to at least:

receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request;

parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions;

determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse;

only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective

prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and

in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

14. The apparatus according to claim 13 wherein the at least one memory and the computer program code are configured to, with the processor, cause the apparatus to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by determining whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the respective prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse.

15. The apparatus according to claim 14 wherein the one or more prescriptions of the patient related to the prescription drug comprise one or more prescriptions of the patient for a prescription drug of a same class of prescription drugs as the prescription drug from the respective prescription drug claims transaction that has been received.

16. The apparatus according to claim 15 wherein at least one of the one or more prescriptions of the patient related to the prescription drug comprises a prescription of the patient for a different prescription drug than the prescription drug from the respective prescription drug claims transaction that has been received, and wherein the different prescription drug and the prescription drug from the respective prescription drug claims transaction that has been received are within the same class of prescription drugs.

17. The apparatus according to any one of claims 14 to 16 wherein the at least one memory and the computer program code are further configured to, with the processor, cause the apparatus to:

in an instance in which the prescription drug is included in the subset, create a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction; and

store the prescription drug record in the database, and

wherein the at least one memory and the computer program code are configured to, with the processor, cause the apparatus to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria by accessing, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions.

18. The apparatus according to claim 17 wherein the at least one memory and the computer program code are further configured to, with the processor, cause the apparatus to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

19. A non-transitory computer-readable storage medium of a service provider computing device having computer-executable program code instructions stored therein that are configured to process prescription drug claims transactions from a plurality of pharmacy computers operative in a network to identify potential prescription drug misuse, wherein the service provider computing device is of a claims processor configured to process the prescription drug claims transactions or a service provider that edits the prescription drug claims transactions prior to providing the prescription drug claims transactions to the claims processor, and wherein the computer-executable program code instructions comprise program code instructions configured to:

receive data relating to a plurality of prescription drug claims transactions from pharmacy computers of a plurality of pharmacies that operate independently in relation to fulfillment of prescriptions such that the service provider computing device is in common for the plurality of independently operating pharmacies, wherein the data that is received relates to prescription drug claims transactions that comprise a prescription claim request, a medical claim request or a predetermination of benefits request;

parse the data to identify a patient and a prescription drug from a respective prescription drug claims transaction of the plurality of prescription drug claims transactions;

determine whether the prescription drug is included in a subset of prescription drugs to be monitored for potential misuse;

only in an instance in which the prescription drug is included in the subset, monitor for potential misuse by formulating a search query for a database of prescription drug claims transactions based upon the patient and the prescription drug identified from the respective prescription drug claims transaction and determine by reference to the database of prescription drug claims transactions whether prescriptions of the patient related to the prescription drug that have been filled at any of one or more pharmacies satisfy criteria indicative of potential prescription drug misuse; and

in an instance in which the criteria indicative of the potential prescription drug misuse is satisfied, cause a notification to be provided to a pharmacy that submitted the respective prescription drug claims transaction.

20. The non-transitory computer-readable storage medium according to claim 19 wherein the program code instructions configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria comprise program code instructions configured to determine whether one or more prescriptions of the patient related to the prescription drug from one or more prior prescription drug claims transactions in combination with the prescription drug from the respective prescription drug claims transaction that has been received satisfy the criteria indicative of potential prescription drug misuse.

21. The non-transitory computer-readable storage medium according to claim 20 wherein the one or more prescriptions of the patient related to the prescription drug comprise one or more prescriptions of the patient for a prescription drug of a same class of prescription drugs as the prescription drug from the respective prescription drug claims transaction that has been received.

22. The non-transitory computer-readable storage medium according to claim 21 wherein at least one of the one or more prescriptions of the patient related to the prescription

drug comprises a prescription of the patient for a different prescription drug than the prescription drug from the respective prescription drug claims transaction that has been received, and wherein the different prescription drug and the prescription drug from the respective prescription drug claims transaction that has been received are within the same class of prescription drugs.

23. The non-transitory computer-readable storage medium according to any one of claims 20 to 22 wherein the computer-executable program code instructions further comprise program code instructions configured to:

in an instance in which the prescription drug is included in the subset, create a prescription drug record including at least the patient and the prescription drug of the prescription drug transaction; and

store the prescription drug record in the database, and

wherein the program code instructions configured to determine whether the prescriptions for the patient related to the prescription drug satisfy the criteria further comprise program code instructions configured to access, from the database, one or more prescription drug records of the patient associated with the one or more prior prescription drug claims transactions.

24. The non-transitory computer-readable storage medium according to claim 23 wherein the computer-executable program code instructions further comprise program code instructions configured to associate the prescription drug record in the database with a patient record associated with the patient and also stored by the database.

25. The system according to any one of claims 1 to 6 wherein the criteria indicative of potential prescription drug misuse is based on one or more of a number of different pharmacies at which the prescriptions have been fulfilled for the patient or a number of different prescriptions fulfilled for the patient.

26. The system according to claim 5 or 6 wherein the processing circuitry is configured to create the prescription drug record so as to comprise a flag, a tag or identifier in an

instance in which the prescription drug of the prescription drug record being included in the subset to be monitored for potential misuse.

27. The system according to claim 5 or 6 wherein the processing circuitry is configured to store the prescription data record by storing the prescription data record within a subfile that is configured to store only those prescription drug records for prescription drugs included in the subset of prescription drugs to be monitored for potential misuse.

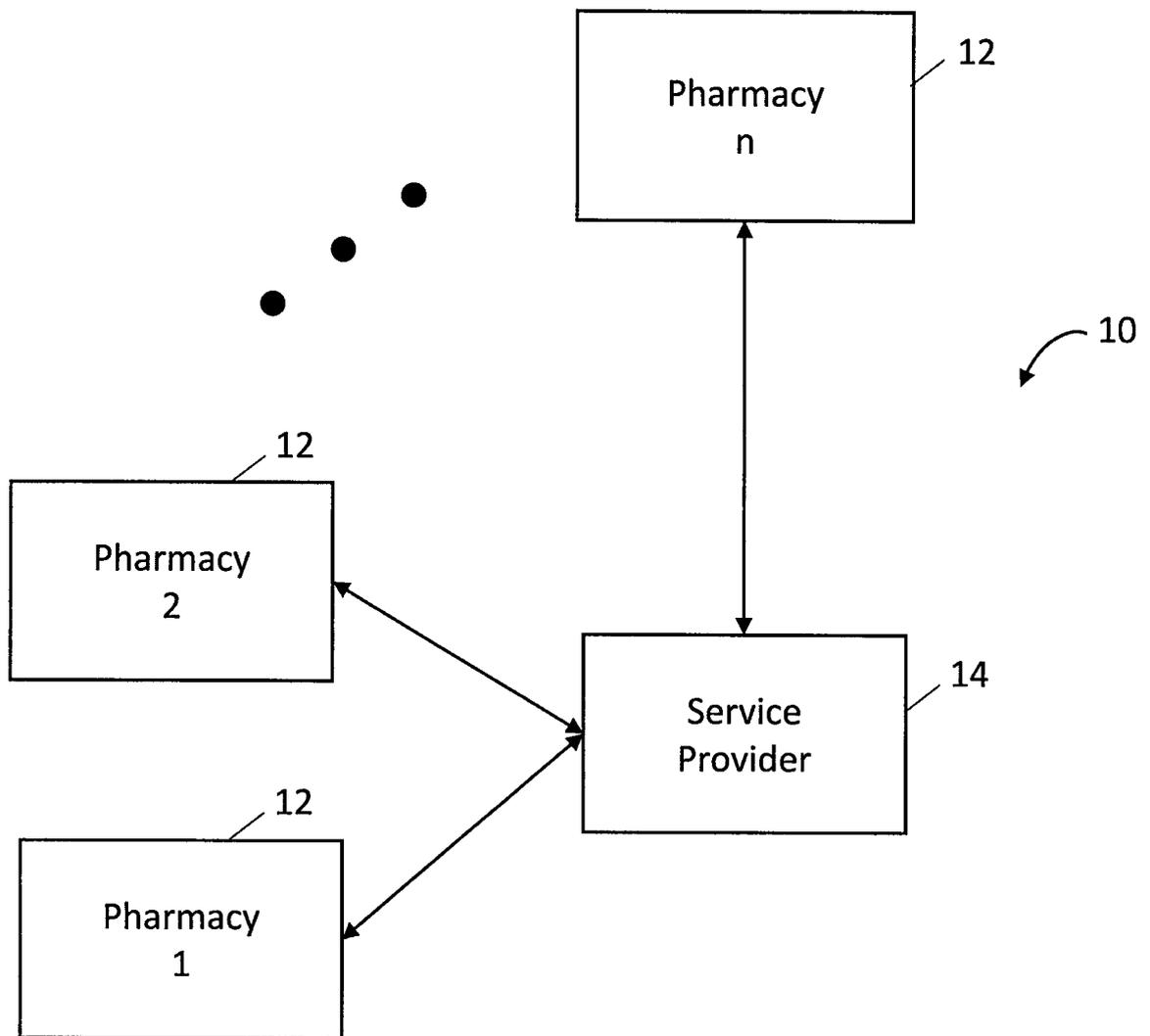


Figure 1

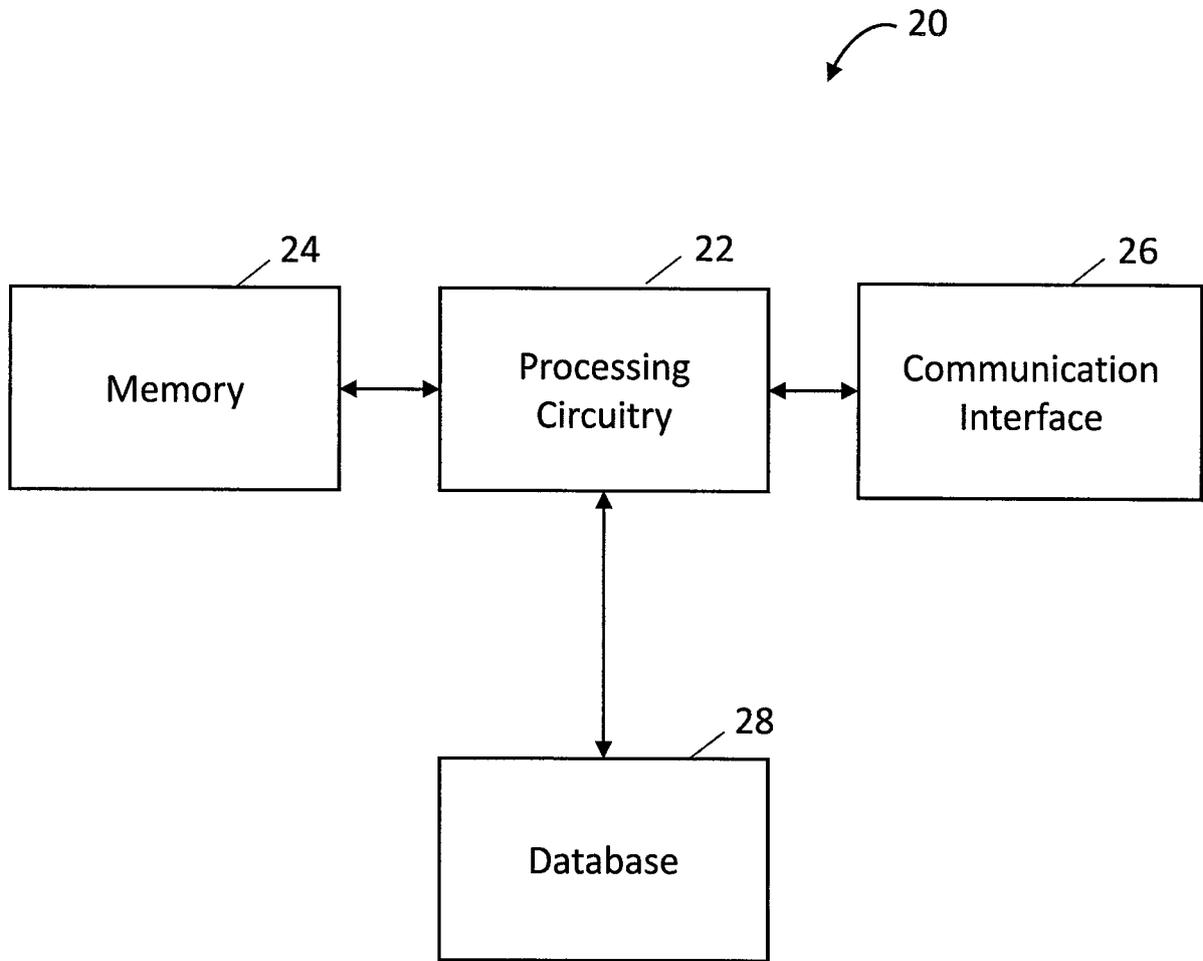


Figure 2

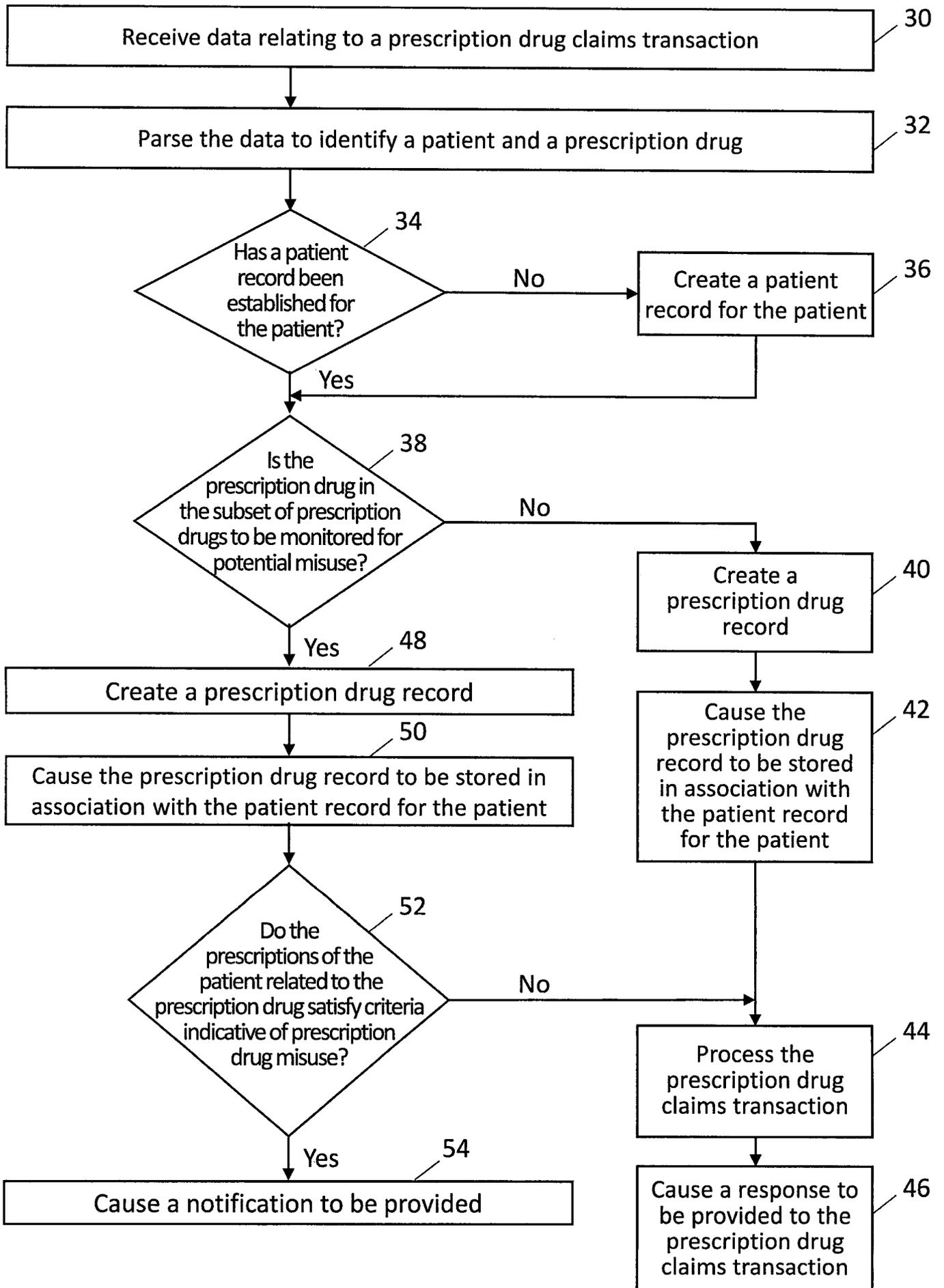


Figure 3

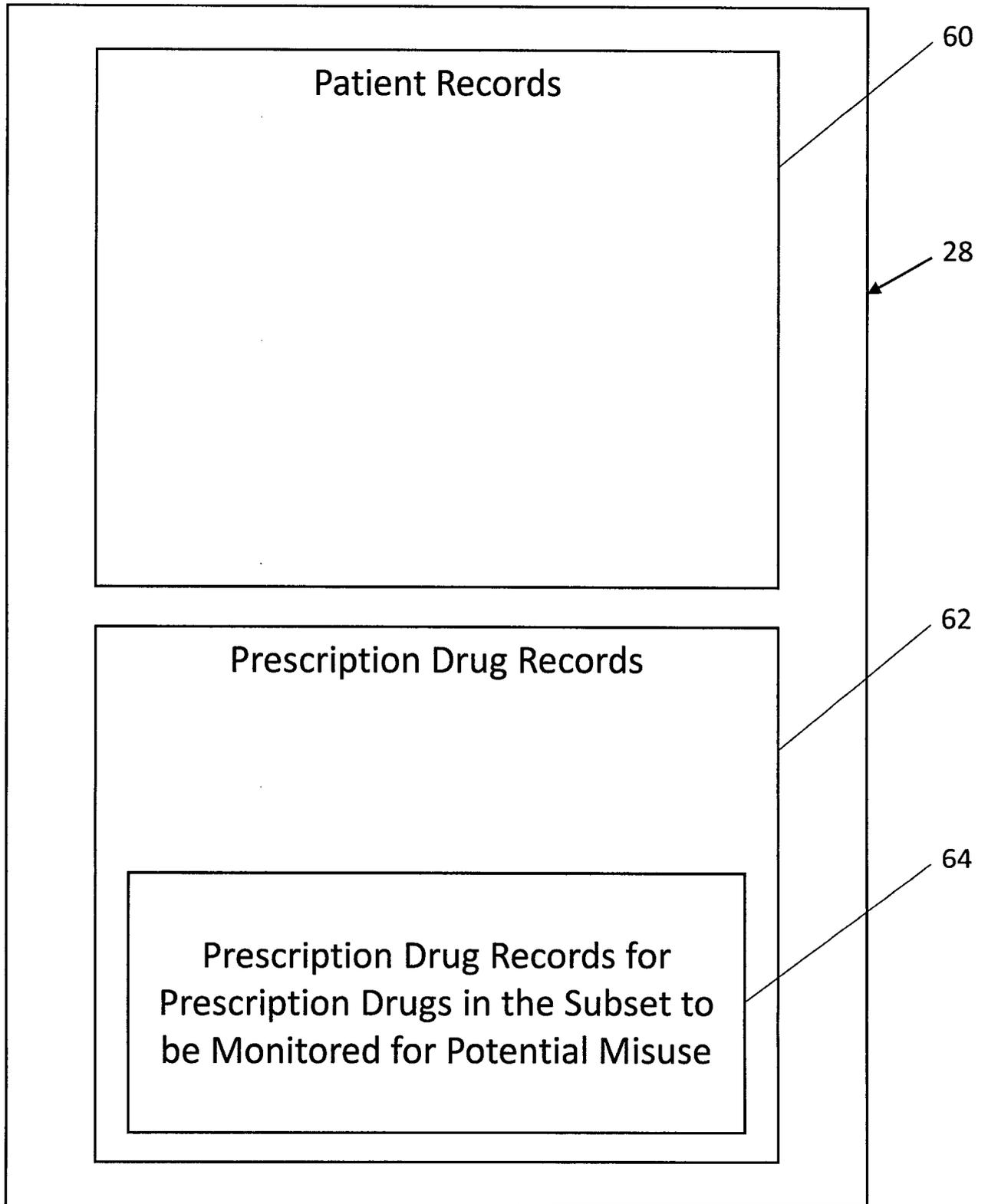


Figure 4

