Description

THE METHOD FOR ELECTRONIC EXAMINATION OF MEDICAL FEES

Technical Field

[1] The present invention relates to a method for electronic examination of medical fees, and more particularly to a method for electronic examination of medical fees using a system for electronic examination of medical fees. The system includes a transmit/receive server, a bill examination server, a management terminal and examiner terminals, and communicates with each medical institution server and a national health insurance corporation server. The bill examination server checks any error in medical bills and specifications received from each medical institution server through description inspection, automatic inspection, specialist inspection and computational examination. The bill examination server returns, corrects or adjusts any erroneous bill or specification, or inserts a message into the erroneous bill or specification. The management terminal distributes medical bills and specifications on which computational examination has been completed to the examiner terminals. Each examiner terminal produces a statement of examination adjustment according to the examination results inputted by an examiner during on-screen examination and sends the statement to the bill examination server. Then the bill examination server generates an examination decision file based on the examination results and sends the file to the corresponding medical institution server and simultaneously to the national health insurance corporation server.

Background Art

[2] Under a health insurance system, each medical institution sends a bill for medical fees (including medical benefits) and a specification of services performed by a medical institution to a health insurance examination center. The health insurance examination center examines the medical bill and specification to determine whether the medical fees billed by the medical institution are reasonable, and sends the examination results to the national health insurance corporation. The national health insurance corporation pays the medical fees to the medical institution based on the examination results informed from the health insurance examination center.

[3] The health insurance examination center distributes bills and specifications submitted by medical institutions, such as special sanatoriums, general hospitals, dental clinics, herb medical hospitals or clinics, pharmacies and public health centers, to examiners and lets the examiners examine the bills and specifications and thereby determine whether the medical services offered and the medical fees billed are right

and reasonable. Recently, due to the increasing number of medical institutions and a growing diversity in the kinds of diseases reported, the types of medical practice and the kinds of drugs and medications have also increased, thereby causing the examiners ever-increasing workload in examination of medical bills and specifications. Particularly, the examiners have difficulties when examining medical bills and specifications relating to various new drugs and medications prescribed for the treatment of new kinds of diseases. Since the medical fees are paid to the medical institutions according to the examination procedure and progress in the health insurance examination center, the working efficiency of the examiners in the health insurance examination center is significant to the medical institutions. Therefore, it is highly required to improve the efficiency in examination of medical bills and specifications by the health insurance examination center.

Disclosure of Invention

Technical Problem

[4] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and an object of the present invention is to provide a method for electronic examination of medical fees using a medical fee electronic examination system which includes a transmit/receive server, a bill examination server, a management terminal and examiner terminals, and which communicates with medical institution servers and a national health insurance corporation server, said method comprising the steps of: checking any error in medical bills and specifications received from each medical institution server in the bill examination server through description inspection, automatic inspection, specialist inspection and computational examination, and returning, correcting or adjusting any erroneous bill or specification, or inserting a message into the erroneous bill or specification; distributing the medical bills and specifications on which computational examination has been completed to the examiner terminals by the management terminal; producing in each examiner terminal a statement of examination adjustment according to the examination results inputted by an examiner during on-screen examination and sending the statement to the bill examination server from the examiner terminal; and generating an examination decision file based on the examination results in the bill examination server and sending the file to a corresponding medical institution server and simultaneously to the national health insurance corporation server from the bill examination server.

Technical Solution

[5] In order to accomplish the above object, there is provided a method for electronic examination of medical fees using a medical fee electronic examination system which includes: a transmit/receive server having a primitive database and communicating

with each medical institution server through a communication relay center and a network; a bill examination server having an examination database, an examination reference database and a portal receipt database and communicating with each medical institution server, a health insurance corporation server and the transmit/receive server; a management terminal and examiner terminals communicating with the bill examination server, said method comprising the steps of: a bill and specification receiving step in which the transmit/receive server accesses the communication relay center, receives medical bills and specifications sent from each medical institution and stores the received medical bills and specifications in the primitive database; a bill and specification receipt registering step in which the bill examination server receives the bills and specifications from the transmit/receive server, assigns a receipt number to each bill, registers the receipt and stores the received bills and specifications in the examination database; a description inspection step in which the bill examination server inspects descriptions in the received bills and specifications, including basic information on each medical institution and a bill classification, and sending a notice of return to a corresponding medical institution server if any error or omission is detected in descriptions of a bill or a specification; an automatic inspection step in which the bill examination server performs an automatic inspection on the specifications on which description inspection has been completed in order to detect any error in items billed, including a reference price applied, fees calculated and benefits applied for, and corrects the detected error or inserts a message into a corresponding specification; a specialist inspection step in which a specialist checks the specifications on which automatic inspection has been completed or corrected specifications to determine whether items, such as medical fee, drug price, drug dispensing fee and injection fee, are correct, and corrects any incorrect item or inserts a message into a corresponding specification; a computational examination step in which the bill examination server performs a computational examination on the specifications on which specialist inspection has been completed in order to detect any treatment or dosage exceeding a preset limit in items including cold and medication use evaluation, and adjusts a billed amount or inserts a message into a corresponding specification if an excessive treatment or dosage is detected; a bill and specification distribution step in which the management terminal receives a list of bills and specifications, on which computational examination has been completed and which are subject to on-screen examination, from the bill examination server and distributes the bills and specifications to the examiner terminals; an on-screen examination result sending step in which each examiner terminal receives the distributed bills and specifications from the bill examination server, allows an examiner to input examination results for the bills and specifications, and sends the inputted examination results to the bill examination

server; and an examination decision file generating and sending step in which the bill examination server generates an examination decision file based on the examination results received from each examiner terminal and adjusted bills and specifications, and sends the examination decision file to the medical institution server and the national health insurance corporation server.

[6] In the description inspection step, if over a predetermined rate of specifications attached to a bill are erroneous, a notice of return will be sent to return the bill and all the specifications attached thereto.

[7] After the automatic inspection step, the method for electronic examination of medical fees according to the present invention may further comprise: an erroneous specification sending step in which the bill examination server sends a specification having an error in automatic inspection items which are assigned automatic inspection codes to the portal receipt database; and a corrected specification receiving step in which the bill examination server receives a specification with the error corrected by the medical institution server and performs an automatic inspection on the corrected specification. The automatic inspection items assigned automatic inspection codes may include at least one of an error in estimation of a unit price, an error in a fee code, an error in application of a reference medical fee, an error in calculation of a billed amount, an item of non-benefits or user charge in whole, a failure to submit a reference document, an error in code classification, an error or omission in the inspection authority number or request date of inspection if inspection was entrusted to an inspection authority, and arbitrary direct dispensing.

[8] In the automatic inspection step, the bill examination server may refer to a master file including information necessary for the examination of automatic inspection items and stored in the examination reference database.

[9] In the computational examination step, the computational examination on the cold item is performed to check a specification relating to acute respiratory infection and adjust the billed amount or indicate the adjustment in a statement of examination adjustment if any treatment or dosage exceeding a preset limit is detected in the specification. Also, the inspection on the medication use evaluation item is performed to detect any improper prescription of medications which are prohibited to be taken together or at certain ages, and indicate the improper prescription in the statement of examination adjustment.

[10] The management terminal displays a list of bills to be distributed according to predetermined conditions, such as dates of receipt and medical institutions, and distributes the bills and specifications attached thereto to selected examiner terminals using an automatic distribution or division distribution method.

[11] The on-screen examination result sending step may further include: sending the

bills and specifications distributed to each examiner terminal to an examination commissioner terminal to entrust the examination of the bills and specifications; and sending examination results inputted by the examination commissioner terminal to the bill examination server.

[12] After the examination decision file generating and sending step, the method for electronic examination of medical fees according to the present invention may further comprise: an eligibility appraisal result receiving step in which the bill examination server receives results of appraisal of medical care receivers' eligibility from the national health insurance corporation server and updates information stored in the examination reference database according to the eligibility appraisal results.

[13] In the on-screen examination result sending step, the examiner terminal indicates any adjustment inputted by at least one method of singular adjustment, aggregate queue adjustment, plural adjustment, compulsive adjustment and associated adjustment in the statement of examination adjustment.

[14] In the on-screen examination result sending step, the examiner terminal indicates an adjustment made on at least one of items, including calculation error, insufficiency to receive benefits, non-benefit item and a 100/100 user charge item, in the statement of examination adjustment.

[15] Also, in the on-screen examination result sending step, the examiner terminal displays medical service inquiry data. When the 100/100 user charge item is clicked, 100/100 medical service inquiry data is displayed. When a particular item is clicked again, details of the particular item are displayed.

Advantageous Effects

[16] In the electronic examination of medical fees according to the present invention, items that can be formalized are previously set to be checked in the bill examination server before examination by the examiner, which reduces the examiner's workload and improves the efficiency of examination.

[17] Also, the bill examination server returns any erroneous bills or specifications detected during its inspection process to a pertinent medical institution or requests a correction to an erroneous item, thereby improving the efficiency of examination.

[18] Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Brief Description of the Drawings

[19] The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the

accompanying drawings, in which:

[20] FIG. 1 is a block diagram of a medical fee electronic examination system for carrying out a method for electronic examination of medical fees according to a preferred embodiment of the present invention;

[21] FIG. 2 is a flowchart showing a process of electronic examination of medical fees according to a preferred embodiment of the present invention;

[22] FIG. 3 shows distribution quantity registration data displayed on a management terminal;

[23] FIG. 4 shows division distribution registration data displayed on a management terminal;

[24] FIG. 5 shows specification distribution status data displayed on an examiner terminal;

[25] FIG. 6 shows a display screen of an examiner terminal which displays a bill selection mode;

[26] FIG. 7 shows a display screen of an examiner terminal which displays a specification selection mode for selecting specifications according to the search condition (same medical care receiver);

[27] FIG. 8 shows a display screen of an examiner terminal which displays a specification selection mode for selecting specifications corresponding to a specific item;

[28] FIG. 9 shows a display screen of an examiner terminal which displays a specification selection mode for selecting a specification corresponding to a specification serial number;

[29] FIG. 10 shows a display screen of an examiner terminal which displays medical treatment data included in a specification of medical fees billed on a monthly basis;

[30] FIG. 11 shows a display screen of an examiner terminal which displays medical treatment data included in a specification of medical fees billed on a daily basis;

[31] FIG. 12 shows a display screen of an examiner terminal which displays medical treatment data included in a specification sent from a pharmacy;

[32] FIG. 13 shows an aggregate queue adjustment performed on an examiner terminal;

[33] FIG. 14 shows a master file search window generated on a display screen of an examination terminal;

[34] FIG. 15 shows general specification items displayed on an examiner terminal;

[35] FIG. 16 shows original billing data displayed on an examiner terminal;

[36] FIG. 17 shows 100/100 user-charge treatment data displayed on an examiner terminal;

[37] FIG. 18 shows data displayed upon a line number selection on an examiner terminal;

[38] FIG. 19 shows a medical treatment specification of a public health center which is

displayed on an examiner terminal for on-screen examination; and

[39] FIG. 20 shows medical treatment data displayed on an examiner terminal upon selection of a specification of a public health center.

Best Mode for Carrying Out the Invention

[40] Hereinafter, a preferred embodiment of the present invention will be described with reference to the accompanying drawings. Descriptions of well-known functions and constructions are omitted for clarity and conciseness. In the following description, the same reference numeral will be used for the same element.

[41] A system 100 for electronic examination of medical fees according to a preferred embodiment of the present invention will be explained. FIG. 1 is a block diagram of the medical fee electronic examination system 100 for carrying out a method for electronic examination of medical fees according to a preferred embodiment of the present invention.

[42] Referring to FIG. 1, the medical fee electronic examination system 100 includes a transmit/receive server 10, a bill examination server 20, a management server 30, a plurality of examiner terminals 40 and an examination commissioner terminal 50. The medical fee electronic examination system 100 may further include a plurality of branch bill examination servers (not shown) installed in local branches of a health insurance examination center and communicating with the bill examination server 20. The bill examination server 20 has an examination database 22, a portal receipt database 24 and an examination reference database 26. The transmit/receive server 10 has a primitive database 12.

[43] The bill examination server 20 communicates with a medical institution server 200 through the transmit/receive server 10 and a communication relay center 250. Also, the bill examination server 20 communicates with a national health insurance corporation server 300 through a network. The bill examination server 20 controls transmission and receipt of medical bills, specifications and examination decision files in communication with the medical institution server 200 and the national health insurance corporation server 300. In addition, the bill examination server 20 controls the overall process of electronic examination of medical fees in communication with the transmit/receive server 10, management terminal 30, examiner terminals 40 and judge terminal 50.

[44] The bill examination server 200 authenticates the medical institution server 200 which can send a request for medical fee payment to the health insurance examination center, and assigns a medical code which is a unique identifier to the medical institution server 200. The bill examination server 20 stores basic information inputted to authenticate the medical institution server 200 in the examination reference database

26 and manages the stored basic information. The bill examination server 20 may separately store the results of examination of medical bills and specifications sent from the medical institution server 200 in the examination reference database 26 according to the kinds of medical institutions. The results of examination can be offered to examiners in order to be used as reference data for determining a billing trend of the medical institutions and thereby to improve the examination efficiency.

[45] The bill examination server 20 receives a medical bill and specification sent from the medical institution server 200 and stored in the communication relay center 250 of a communication relay company (for example, KT Corporation), and sends a notice of receipt or a notice of return. More specifically, the bill examination server 20 controls the transmit/receive sever 10 to deliver a medical bill and specification received from the communication relay center 250 and stored in the primitive database 12. The bill examination server 20 stores the medical bill and specification received from the transmit/receive server 10 in the examination database 22. Also, the bill examination server 20 sends a notice of receipt or a return notice for the medical bill and specification to the medical institution server 200 through the transmit/receive server 10 and the communication relay center 250. The bill examination server 20 can directly send the notice of receipt to the medical institution server 200 through the transmit/receive server 10 or the network.

[46] Each bill and specification is prepared according to EDI (Electronic Data Interchange) of a defined format MIG (Message Implementation Guideline Abstracts) and sent in form of an encrypted electronic document from the medical institution server 200 to the communication relay center 250. The communication relay center 250 stores the electronic documents of bills and specifications in a relay database 255 and maintains the documents in a state receivable by the transmit/receive server 10. The medical institution server 200 prepares bills and specifications at regular billing intervals which are generally set according to medical services, and sends the prepared bills and specifications to the communication relay center 250. The billing intervals can be set to once a week in case of hospital treatment or once a month in case of outpatient medical treatment. Also, pharmacy drug dispensing fees can be billed once a week or once a month.

[47] The bill examination server 20 receives bills and specifications stored in the primitive database 12 and processes each bill and specification into a data format which can be examined on a screen. The processed data is stored in the examination database 22. For the management purpose, the bill examination server 20 assigns a receipt number consisting of consecutive digits to each bill, while assigning a specification serial number to the specification attached to each bill. The bill examination server 20 registers the receipt of the bills and specifications and manages the bills and

specifications stored in the examination database 22.

[48] The bill examination server 20 checks each received bill and specification through description inspection, automatic inspection, specialist inspection and computational examination. After checking, the bill examination server 20 generates a statement of examination adjustment and stores the statement in the examination database 22. Also, the bill examination server 20 generates a list of bills and specifications subject to on-screen examination among those undergone a computational examination, and stores the generated list in the examination database 22. The list will be sent to the management terminal 30 when requested. The bill examination server 20 classifies medical institutions into green authenticated institutions, index institutions and precise examination institutions according to the examinee selection standards established to improve examination efficiency and effects. The bill examination server 20 may reflect the rate of returns, rate of corrections and rate of adjustments for the medical bills and specifications received from each medical institution in the classification of medical institutions. The green authenticated institutions are medical institutions which voluntarily and faithfully provide medical care benefits and requests payment of the fees as prescribed in the related regulations, such as the National Health Insurance Act. For the bills and specifications received from the green authenticated institutions, the bill examination server 20 carries out only a computational examination of the specifications and examination of additional or complementary bills, omitting other examination or inspection procedures. The index institutions refer to medical institutions which show a good billing attitude. For the bills and specifications received from the index institutions, the bill examination server 20 carries out basic description inspection and computational examination, omitting other examination or inspection procedures. For the bills and specifications received from the precise examination institutions, the bill examination server 20 carries out on-screen examination and examiner's examination after computational examination. The classification is included in the information on each medical institution.

[49] The bill examination server 20 receives examination closing information from the management terminal 30 and generates an examination decision file based on the bills and specifications and the statements of examination adjustment which are received from the examiner terminals 40 or the examination commissioner terminal 50. The bill examination server 20 stores the examination decision file in the examination database 22. In other words, the management terminal 30 distributes bills and specifications stored in the examination database 22 to the plurality of examiner terminals 40. The management terminal 30 closes the examination according to the on-screen examination results transmitted from the examiner terminals 40 or the examination commissioner terminal 50, and sends the examination closing information to the bill ex-

amination server 20. The bill examination server 20 generates an examination decision file based on the on-screen examination results which include adjusted bills, specifications and statements of examination adjustment.

[50] The bill examination server 20 sends the examination decision file generated based on the examination results and transmitted from the examiner terminals 40 and the examination commissioner terminal 50 to the transmit/receive server 10 and the national health insurance corporation server 300. The transmit/receive server 10 sends the examination decision file received from the bill examination server 20 to the medical institution server 200 directly or via the communication relay center 250. The national health insurance corporation server 300 appraises eligibility to receive health insurance benefits for the medical care receivers named in the examination decision file and sends the eligibility appraisal results to the bill examination server 20.

[51] The bill examination server 20 updates information on medical care receivers eligible to receive health insurance benefits, which is stored in the examination reference database 26, based on the eligibility appraisal results included in the specifications on which examination decision has been rendered.

[52] The transmit/receive server 10 accesses the communication relay center 250 to receive bills and specifications sent from the medical institution server 20 by dates of receipt. The transmit/receive server 20 stores the received bills and specifications in the primitive database 12 and closes receiving. Also, the transmit/receive server 10 may convert the bills and specifications into an appropriate format usable in the medical fee electronic examination system in place of the bill examination server 20 and then store the converted data in the primitive database 12. At this time, the transmit/receive server 10 separately stores the converted bills and specifications in the primitive database 12. In addition, the transmit/receive server 10 receives an examination decision file from the bill examination server 20 and resends the file to the medical institution server 200.

[53] The examination database 22 communicates with the bill examination server 20, and stores received bills, specifications and receipt details. The examination database 22 stores information on the distribution of the bills and specifications sent from the bill examination server 20. The examination database 22 stores bills and specifications adjusted after completion of examination and statements of examination adjustment. In addition, the examination database 22 stores examination decision files generated in the bill examination server 20.

[54] The examination reference database 26 communicates with the bill examination server 20, and stores a master file including medical service fees, drug prices, material prices, kinds of diseases and fee calculation guidelines which are necessary for automatic inspection, specialist inspection and computational examination. The ex-

amination reference database 26 stores a medical institution file including information on each medical institution, such as a medical code, facility, equipment, employees, closing of business, reopening, change in jurisdiction, acknowledged month of treatment. The examination reference database 26 also stores an access identifier and a password which are assigned to each medical institution during the authentication procedure for accessing the portal receipt database 24. The access identifier can be the same as the medical code. In such a case, the access identifier is not additionally stored. The examination reference database 26 also stores information on medical care receivers who are eligible to receive health care insurance benefits. Thus, during inspection on descriptions in the specifications, the bill examination server 20 can check whether the medical care receivers named in the specifications are eligible to receive health insurance benefits. The bill examination server 20 updates the examination reference database 26 based on the eligibility appraisal results included in the specifications on which examination decision has been rendered.

[55] The portal receipt database 24 communicates with the bill examination server 20 and the medical institution server 200, and stores erroneous specifications in which errors have been detected during automatic inspection on the specifications. The portal receipt database 24 accesses the medical institution server 200 and stores specifications with errors corrected. The bill examination server 20 accesses the portal receipt database 24 and receives the corrected specifications to perform automatic inspection on the corrected specifications.

[56] The management terminal 30 communicates with the bill examination server 20 and the examiner terminals 40, and receives a list of bills and specifications returned or corrected after description inspection, automatic inspection and computational examination and subject to on-screen examination from the bill examination server 20. Then the management terminal 30 distributes the bills and specifications to the examiner terminals 40. When receiving a notice of examination completion from the examiner terminals 40, the management terminal 30 closes the examination on the distributed bills and specifications.

[57] To be specific, when the list of bills and specification subject to on-screen examinations is received, the management terminal 30 inputs distribution quantity conditions, such as a date of receipt, treatment areas and same medical care receivers, in the list and decides examiners who will examine the bills and specifications. The management terminal 30 may distributes new bills and specifications under specific conditions or re-distributes corrected bills and specifications. When distributing the bills and specifications to the examiners, the management terminal 30 registers each examiner as an examiner-in-charge.

[58] The management terminal 30 sends distribution information, including a list of bills

and specifications distributed to the examiners, to the bill examination server 20. Then the bill examination server 20 stores the received distribution information in the examination database 22. If requested, the management terminal 30 will access the bill examination server 20 to receive information about the status of distribution to each examiner and the department of each examiner and displays the information. When the on-screen examination of the bills and specifications is completed, the management terminal 30 closes the examination of the bills and specifications and sends examination closing information to the bill examination server 20.

[59] The examiner terminals 40 communicate with the bill examination server 20 and the management terminal 40. The examiner terminals 40 receive the list of distributed bills and specifications and display the list. Each examiner terminal 40 displays details of a selected bill or specification so that the examiner can perform an on-screen examination. Also, each examiner terminal 40 displays the examiner's input according to the examiner results on the examination screen and sends the input data to the bill examination server 20. More specifically, the examiner inputs the results of general description examination which checks any error in the medical institution information and the results of examination on medical service fees, such as consult fee, hospitalization fee, examination fee, medication fee, dispensing fee and injection fee. Each examiner terminal 40 delivers the examination results inputted by the examiner to the bill examination server 20.

[60] The examiner terminals 40 communicate with the examination commissioner terminal 50. The examiner terminals 40 sends information on bills and specifications which are required to be examined by the examination commissioner, and requests the examination commissioner to examine the bills and specifications.

[61] The examination commissioner terminal 50 communicates with the bill examination server 20 and the examiner terminals 40. The examination commissioner terminal 50 displays bills and specifications which are requested to be examined by the examination commissioner. The examination commissioner is a specialized examiner who can examine bills and specifications with medical knowledge and determine the appropriateness of medical services performed. The results of examination by the examination commissioner are inputted in the examination commissioner terminal 50. Since the configuration and functions of the examination commissioner terminal 50 are identical or similar to those of the examiner terminals 40, no further explanation of the examination commissioner terminal 50 will be offered.

[62] Branch bill examination servers (not shown) installed in local branches of the health insurance examination center communicate with the bill examination server 20 installed in the head office of the center through a network. Each branch bill examination server also communicate with branch examiner terminals 40 and a branch

management terminal 30 which are installed in a local branch. For the bills and specifications examined in branches, the branch bill examination servers send the examination results to the bill examination server 20 of the head office. The branch examiner terminals 40 and the branch management terminal 30 have the same or similar configurations and functions as the examiner terminals 40 and the management terminal 30 communicating with the bill examination server 20. Accordingly, a detailed explanation of the branch examiner terminals 40 and the branch management terminal 30 will be omitted.

[63] The medical institution server 200 sends medical bills and specifications to the transmit/receive server 10 or the bill examination server 20 of the health insurance examination center through the communication relay center 250, and receives notices of receipt, notices of return and examination failure information through the communication relay center 250. Medical institutions include special sanatoriums, general hospitals, surgical clinics, dental clinics, herb medical hospitals or clinics, pharmacies and public health centers which are associated with medical care services and qualified to bill medical fees to the health insurance examination center. In order to sends medical bills and specifications, the medical institution server 200 requests the bill examination server 20 of the health insurance examination center to authenticate. During authentication of the medical institution server 200, the bill examination server 20 assigns a medical code which is a unique identifier. The medical institution server 200 can access the communication relay center 250 using the assigned medical code and send the bills and specifications.

[64] Also, the medical institution server 200 can access the portal receipt database 24 to correct any specification which cannot be examined due to an error or omission detected during description inspection and to correct any erroneous bill or specification according to the results of automatic inspection. In order to access the portal receipt database 24, the medical institution server 200 first accesses a homepage 28 of the health insurance examination center and receives authentication. At this time, an access identifier is assigned. The access identifier can be same as a medical code assigned to each medical institution.

[65] The national health insurance corporation server 300 communicates with the bill examination server 20 of the health insurance examination center. The national health insurance corporation server 300 appraises eligibility to receive health insurance benefits for the medical care receivers named in the bills and specifications based on the examination decision file sent from the bill examination server 20, and sends the eligibility appraisal results to the bill examination server 20 of the health insurance examination center.

[66] Hereinafter, a process for electronic examination of medical fees according to a

preferred embodiment of the present invention will be explained. FIG. 2 is a flowchart showing a process of electronic examination of medical fees according to a preferred embodiment of the present invention.

[67] Referring to FIG. 2, the electronic examination process includes the steps of: receiving medical bills and specifications (S10); registering the receipt of the bills and specifications (S20); inspecting descriptions in the bills and specifications (S30); performing an automatic inspection on the specifications (S40); performing a specialist inspection on the specifications (S50); performing a computational examination of the specifications (S60); distributing the bills and specifications (S70); sending results of an on-screen examination (S80); and generating and sending an examination decision file (S90). The process of electronic examination of medical fees may further include the step of: returning any erroneous bills and specifications (S35); sending an erroneous specification to the portal receipt database (S42); and performing an automatic inspection on a corrected specification (S44). The process of electronic examination of medical fees may further include the step of sending results of an on-screen examination conducted by an examination commissioner (S85). Also, the process may further include the step of receiving eligibility appraisal results for medical care receivers (S100).

[68] In the step of receiving medical bills and specifications (S10), the transmit/receive server 10 accesses the communication relay center 250 and receives the medical bills and specifications sent from the medical institution server 200. The medical institution server 200 converts each bill and specification into an EDI format and sends the converted data to the communication relay center 250 which will stored the received data in the relay database 255. The transmit/receive server 10 receives each medical institution s bills and specifications which were delivered to the communication relay center 250, and converts the bills and specifications into a format that can be used in the bill examination server 20. The converted format of bills and specifications can be stored in the primitive database 12. In other words, the transmit/receive server 10 converts the bills and specifications sent in an EDI format into a format usable in the bill examination server 20. The transmit/receive server 10 determines the data validity and compatibility of the bills and specifications, and stores only the valid and compatible bills and specifications in the primitive database 12. At this time, the transmit/receive server 10 may separately convert the bills and specifications and store the converted bills and specifications in the primitive database 12. In addition, the transmit/receive server 10 may separately register and manage details of receiving information regarding the received bills and specifications.

[69] In the step (S20) of registering the receipt of the bills and specifications, the bill examination server 20 receives the bills and specifications stored in the transmit/receive

server 10, assigns a receipt number to each bill and registers the receipt details. The bill examination server 20 checks specification serial numbers assigned to the specifications attached to each bill and stores the specification serial numbers in the examination database 22. The bill examination server 20 may send a notice of receipt, which was prepared in a predetermined format to verify the receipt of the bills and specifications, to the medical institution server 200 through the communication relay center 250.

[70] In the step (S30) of inspecting descriptions in the bills and specifications, the bill examination server 20 checks descriptions in the received bills and specifications. Each bill prepared in the medical institution server 200 includes descriptions, such as a document form number, basic information of the pertinent medical institution, bill classification, number of billing cases, total amount of medical care benefits, user (patient) charge and total billed amount. The bill examination server 20 checks whether there is any error in the basic information on the medical institution based on the medical institution information in a medical institution file which was stored in the examination reference database 26. Also, the bill examination server 20 checks any error or omission in the descriptions of each bill, for example, in the document form number, date of medical treatment, number of billing cases, billed amount, accreditation authority, or days of medical treatment. When an error or omission in the descriptions, the bill examination server 20 sends a notice of return of the pertinent bills and specifications to the medical institution server 200. In addition, the bill examination server 20 sends a notice of return when any bills and specifications are sent in violation of predetermined billing intervals (for example, when bills and specifications are sent twice a week in case of hospital treatment).

[71] Generally, a plurality of specifications are attached to one bill and assigned respective specification serial numbers. The specifications describe a medical code of the pertinent medical institution, details (personal data) of each actual medical service receiver, start date of medical service, visit date, dispensing date, details of prescription, details of dispensing, prescription serial number, breakdown of the bill, total amount of medical care benefits, user charge, billed amount and so on. The bill examination server 20 checks any error or omission in the descriptions of the specifications, for example, in the start date of medical service, visit date or dispensing date. Also, the bill examination server 20 checks the specifications to detect medical care benefits applied for after the date of receipt of the specifications, erroneous description of a medical treatment date which is earlier or later than the opening or closing date of a medical institution, errors in dispensing or prescription details, omission of a prescription serial number, medical treatment applicable to a different sex, double billing, or unqualified medical care receivers who cannot receive medical benefits. When any

error or omission is detected in a specification, the bill examination server 20 classifies the specification into "unexaminable" and stops further examination procedure. The bill examination server 20 sends information on the unexaminable specification together with an examination decision file to the medical institution server 200. In addition, if over a predetermined rate (for example, 30%) of specifications attached to a bill are determined to be unexaminable, the bill examination server 20 will then notify the medical institution server 200 of the examination failure by sending a return notice including information, such as the receipt number of the bill. Since the bill examination server 20 picks up and returns bills and specifications having an error or omission in descriptions, it can prevent further examination procedure for such erroneous bills and specifications, and thereby improve the examination efficiency.

[72] In the step (S40) of performing an automatic inspection on the specifications, the bill examination server 20 checks whether there is any error in breakdown of charges in the bills and specifications on which description inspection has been completed. The bill examination server 20 performs an automatic inspection on the bills and specification on which description inspection has been completed, and detects any error in a reference price applied (such as a medical service fee, drug price or doctor fee), calculation of amount billed, an item for which medical care benefits were applied, or a medical service code. A master file which includes information on the automatic inspection items and information necessary for the automatic inspection on each item is stored in the examination reference database 26 of the bill examination server 20. The bill examination server 20 performs the automatic inspection on the object items based on the information in the master file. The automatic inspection items are assigned automatic inspection codes if separate management is required. Therefore, the bill examination server 20 can perform the automatic inspection using the automatic inspection codes. For example, the bill examination server 20 may assign an automatic inspection code "A" to an error in estimation of a unit price, "AK" to an error in a fee code, "B" to an error in application of a reference medical fee,"D" to an error in calculation of a billed amount, "E" to an item of non-benefits or an item of user charge in whole, "F" to a failure to submit a reference document, "K" to an error in code classification, "L" to an error or omission in the inspection authority number or request date of inspection if inspection was entrusted to an inspection authority, and "U" to arbitrary direct dispensing. When a unit price in a specification is different from that in the master file stored in the examination reference database 26, the automatic inspection code "A" is assigned. The automatic inspection code "AK" is assigned when the basic five digits or characters of a fee code are correct but three additional digits or characters are incorrect. The automatic inspection code "B" is assigned when the medical fee is different from the fee in the master file. The automatic inspection code

"D" is assigned when the billed amount is different from the actually calculated amount. The automatic inspection code "E" is assigned when an item of non-benefits or an item of user charge in whole is billed. The automatic inspection code "F" is assigned when a corresponding code is not included in the basic information on the medical institution or when an actual purchase price code shows a purchase of an item after lapse of two years from the medical service start date. The automatic inspection code "K" is assigned when a corresponding code is not included in the master file or when a code classification is omitted or erroneous. The automatic inspection code "L" is assigned when there is an error or omission in an inspection authority number or an inspection request date in case of entrusted inspection. The automatic inspection code "U" is assigned when there is an error or omission in description of exceptions in case of a medicine for internal or external application. When a general or insignificant error is detected during the automatic inspection, the bill examination server 20 adjusts the amounts of a pertinent item or generates a message. On the other hand, when an error is detected in an item assigned an automatic inspection code, the bill examination server 20 sends related information to the portal receipt database 24 so that the medical institution server 200 can directly correct the error. The adjustment made by the bill examination server 20 means direct adjustment of an erroneous item billed. The generation of a message means insertion of a message into a pertinent specification or into a pertinent item line of the specification so that an examiner can see the message during an examiner inspection process. The bill examination server 20 may indicate the adjustment or message according to the results of automatic inspection in a statement of examination adjustment.

[73] In the step (S42) of sending an erroneous specification to the portal receipt database, the bill examination server 20 sends a specification having an error detected in an item assigned an automatic inspection code during the automatic inspection to the portal receipt database 24. To be specific, when an error is detected in an item assigned an automatic inspection code "A", "F", "K", "L" or "U" during the automatic inspection, the bill examination server 20 sends the erroneous specification to the portal receipt database 24 so as to store it. At this time, the bill examination server 20 may inform the medical institution server 200 that the erroneous specification detected during the automatic inspection is stored in the portal receipt database 24.

[74] In the step (S44) of performing an automatic inspection on a corrected specification, the bill examination server 20 receives a specification with the error in the automatic inspection item corrected from the portal receipt database 24 and performs an automatic inspection again on the corrected specification. The medical institution server 200 accesses the portal receipt database 24, corrects the error in the automatic inspection item, and stores the corrected specification in the portal receipt database 24.

At the same time, the medical institution server 200 informs the bill examination server 20 of the correction. Accordingly, the bill examination server 20 can receive the corrected specification and perform the automatic inspection again. Since the automatic inspection on the corrected specification is the same as the automatic inspection process of S40, no further explanation thereof will be made.

[75] In the step (S50) of performing a specialist inspection on the specifications, the bill examination server 20 performs a specialist inspection on the specifications on which automatic inspection has been completed. The specialist inspection is performed on preset items subject to the specialist inspection and preceding items. The bill examination server 20 checks any error in a specialist inspection code assigned to each object item by sub-task. When detecting an error, the bill examination server 200 adjusts the erroneous item or offers a message to the examiner to be reflected onto the examination. The bill examination server 20 may adjust each line of a specification or an entire specification, or include a message in each line or in the entire specification. Also, the bill examination server 20 may indicate the adjustment in the statement of examination adjustment.

[76] The object items of a specialist inspection are items that can be inspected by a specialist using inspection standards formalized based on data, such as guidelines for estimating medical fees and drug fees (for example, reference price tables for medical service fees) and administration interpretations of the Ministry of Health and Welfare. For example, in the reference price tables for medical service fees, details of inspection are classified by sub-tasks and formed to a tree. Items corresponding to the branches of the tree are assigned specialist inspection codes. Inspection range and content of each item is determined according to the assigned specialist inspection code. Each sub-task may be assigned an ID. At this time, ID numbers are assigned by broad classification of sub-tasks (chapter classification in the reference price table for medical service fees), middle classification (estimation guideline classification in the broad classification) and narrow classification (serial numbers in the middle classification). Therefore, each sub-task is a combination of items which will be inspected based on similar or identical examination guidelines grouped from each reference price table. Items (such as medical fee, drug price and doctor's fee) of each sub-task are subject to the specialist inspection. The preceding items are associated with the items subject to the specialist inspection by sub-task. It is necessary to check the presence of the preceding items which are also set on medical fee, drug price, doctor's fee and so on. More specifically, the specialist inspection items can be an age addition guideline, holiday addition, personnel status of a medical institution, special management, report for equipment, disease comparison, items that cannot be estimated simultaneously, medication dispensing fee, number of injections allowed, drug and medication ex-

amination guideline, and an error in billing method.

[77] In the step (S60) of performing a computational examination, the bill examination server 20 performs a computational examination of the specifications on which specialist inspection has been completed. The computational examination is to examine items previously set to improve examination efficiency or by policy. The items relate to cold, medication use evaluation, cough suppressant/expectorant, dental treatment, childbirth treatment, and so on.

[78] The computational examination on the cold item is performed to check a specification relating to acute respiratory infection which is a relatively simple and frequently infecting disease requiring outpatient clinic or hospital treatment. More specifically, a specification describing three or less visit days for the treatment of acute respiratory infection can be subject to the cold computational examination. If any treatment or dosage exceeding a preset limit is detected in the specification, the bill examination server 20 will adjust the billed amount or include a message in the specification so that the examiner can consider the message during examination. The bill examination server 20 may also indicate the adjustment in the statement of examination adjustment.

[79] The computational examination on the medication use evaluation item is performed in view of the "ingredients prohibited to be taken together or at certain ages" which were defined to prevent any improper use of medications and thereby protect our health. If an improper medication prescription is detected in a specification, the bill examination server 20 will adjust the billed amount or include a message in the specification so that the examiner can consider the message during examination. The bill examination server 20 may also indicate the adjustment in the statement of examination adjustment.

[80] The computational examination on the cough suppressant/ expectorant item is performed to detect whether two or more cough suppressants or expectorants were prescribed to treat an upper respiratory disease or whether three or more cough suppressants or expectorants were prescribed to treat a lower respiratory disease. If prescription of cough suppressants or expectorants over a limited number is detected in a specification, the bill examination server 20 will adjust the billed amount or include a message in the specification so that the examiner can consider the message during examination. The bill examination server 20 may also indicate the adjustment in the statement of examination adjustment.

[81] The computational examination on the dental treatment item is performed to sequentially check medical fees, material prices and drug prices in specifications relating to dental caries, dental pulp diseases or periodontal diseases. If any treatment or dosage exceeding a preset limit is detected in a specification, the bill examination server 20

will adjust the billed amount or include a message in the specification so that the examiner can consider the message during examination. The bill examination server 20 may also indicate the adjustment in the statement of examination adjustment.

[82] The computational examination on the childbirth treatment item is performed to sequentially check medical fees, material prices and drug prices in specifications relating to a single natural delivery, single delivery by forceps or vacuum extractor, single delivery by other means, or multiple delivery. If any treatment or dosage exceeding a preset limit is detected in a specification, the bill examination server 20 will adjust the billed amount or include a message in the specification so that the examiner can consider the message during examination. The bill examination server 20 may also indicate the adjustment in the statement of examination adjustment.

[83] As explained above, items subject to the computational examination are previously set. The bill examination server 20 carries out the computational examination on the preset items in the specifications on which specialist inspection has been completed. When a specification including an erroneous or problematic item is detected, the bill examination server 20 adjusts the item and indicates the adjustment in the statement of examination adjustment. If necessary, the bill examination server 20 will include a message regarding the checked items in the state of examination adjustment so that the message can be considered during the examination conducted by the examiner. Also, the bill examination server 20 stores a list of bills and specifications on which computational examination has been completed and which are subject to an on-screen examination, together with the statement of examination adjustment for each specification, in the examination database 22.

[84] In the step (S70) of distributing the bills and specifications, the management terminal 30 receives a list of bills and specifications subject to an on-screen examination and distributes the bills and specifications to the examiner terminals 40. Prior to the distribution, the management terminal 30 checks the bills and specifications on which computational examination has been completed. At this time, the management terminal 30 checks automatic inspection codes "A", "F", "K", "L" and "U" and items checked during the processes from the automatic inspection to the computational examination.

[85] The management terminal 30 displays the list of bills and specifications received from the bill examination server 20, and conducts new distribution or redistribution of the bills and specifications. Before conducting the new distribution which distributes bills and specifications examined for the first time, the management terminal 30 reviews the bills in the order of receipt dates and selects examiners and receipt numbers. The new bills and specifications are distributed to the examiner terminals 40 by an automatic distribution or division distribution method. The automatic dis-

tribution is used only for the new distribution. The automatic distribution is a way to select examiners according to medical institutions or under specific conditions and distribute the new bills and specifications to the selected examiners. In other words, the automatic distribution method distributes all specifications attached to one or more bills to the selected examiners. In the division distribution, however, multiple specifications attached to a single bill are distributed to one examiner. If multiple specifications naming the same medical care receiver are attached to a single bill, the management terminal 30 will distribute those specifications to the same examiner through automatic distribution and division distribution. The management terminal 30 displays distribution quantity registration data or division distribution registration data for the new distribution. FIG. 3 shows distribution quantity registration data displayed on a management terminal. FIG. 4 shows division distribution registration data displayed on a management terminal. The distribution quantity registration data displayed on the management terminal 30 includes bill search conditions (such as the period of receipt dates, department of examiner and indicated treatment area), examiner's name, and data described in a bill (such as the receipt number, receipt date, medical institution, number of hospitalization cases, number of outpatient cases and medical care benefits). The division distribution registration data includes basic bill data (such as the receipt number, receipt date, medical institution, number of specifications attached, number of medical care receivers), a list of object specifications, names of examiners and current distribution status. The list of specifications includes information, such as specification serial numbers, medical care receivers, resident registration numbers of the medical care receivers, total amount of medical care benefits, and treatment areas. The management terminal 30 distributes the specifications according to the number of the specifications inputted after the selection of examiners. If multiple specifications naming the same medical care receiver are included in the list of specifications, those multiple specifications will be selected simultaneously and distributed.

[86] When requested, the examiner terminals 40 receive and display the distribution status. FIG. 5 shows specification distribution status data displayed on an examiner terminal. The specification distribution status data includes status of specifications distributed to the examiners according to the search conditions (such as period of receipt dates, distribution date and department of each examiner) and status of examination progress. The management terminal 30 sends a distribution list including the list of bills and specifications distributed to the examiners to the bill examination server 20.

[87] In the step (S80) of sending on-screen examination results, each examiner terminal 40 receives the distributed bills and specifications, allows an examiner to input results

of examination, and sends the inputted examination results to the bill examination server 20. This step (S80) may include selecting a bill, selecting a specification, conducting an examination on the selected bill and specification, and sending results of the examination. Upon completion of the examination, each examiner terminal 40 sends examination completion information to the management terminal 40. At the same time, each examiner terminal 40 sends a statement of examination adjustment to the bill examination server 20.

[88] Each examiner terminal 40 displays a list of the distributed bills and allows the examiner in charge to select a bill to be examined. FIG. 6 shows a display screen of an examiner terminal 40 which displays a bill selection mode. According to the search conditions inputted by the examiner, such as period of receipt dates, distribution date, incompletion or completion, medium classification, general management and examination method, the examiner terminal 40 displays a list of corresponding bills. In the bill selection mode, items on each bill, such as the receipt date, distribution date, receipt number, medical institution, medical code and name, and year/date of medical treatment, are displayed. Also, in the bill selection mode, a pop-up window is generated to display information on medical care receivers, year/date of treatment corresponding to a specific receipt number, number of cases, number of medical care receivers. Accordingly, each examiner terminal 40 displays a list of specifications attached to a bill selected by the examiner.

[89] Also, the examiner terminal 40 displays a list of specifications attached to each distributed bill in a specification selection mode. FIG. 7 shows a display screen of an examiner terminal which displays a specification selection mode for selecting specifications according to the search condition (same medical care receiver). FIG. 8 shows a display screen of an examiner terminal which displays a specification selection mode for selecting specifications corresponding to a specific item. FIG. 9 shows a display screen of an examiner terminal which displays a specification selection mode for selecting a specification corresponding to a specification serial number. In the specification selection mode, basic items on each bill, specification search conditions and a list of specifications are displayed. Each examiner terminal 40 displays a list of specifications selected according to the search conditions inputted by the examiner in the specification selection mode. The search conditions include a specification serial number, automatic inspection, same medical care receiver, same disease, code and treatment area. Additional sub-conditions can be included in each search condition. For example, the search condition "same medical care receiver" may include additional conditions, such as exclusion of the same medical care receiver, receipt number, current month, inclusion of the last month, and medical care receiver's name and resident registration number. When the search condition is "same medical care

receiver", items such as resident registration number, year/date of medical treatment, receipt number, specification serial number, name of the medical care receiver, and total amount of medical care benefits are displayed in the specification selection mode. Since the examiner conducts an examination on specifications selected as having similar or identical contents, the examination efficiency can be improved.

[90] Each examiner terminal 40 displays medical treatment data included in a selected specification in order to be examined by the examiner. The examiner will examine reasonableness of the amount of medical care benefits and estimation of the medical care benefits based on the examination criteria under the national health insurance act. The examiner may conduct an index examination to check only basic items in the bills and specifications sent from a medical institution. Also, the examiner may entrust an examination commissioner with specialized examination after checking specifications on which computational examination has been completed.

[91] FIG. 10 shows a display screen of an examiner terminal which displays medical treatment data included in a specification of medical fees billed on a monthly basis. FIG. 11 shows a display screen of an examiner terminal which displays medical treatment data included in a specification of medical fees billed on a daily basis. FIG. 12 shows a display screen of an examiner terminal which displays medical treatment data included in a specification sent from a pharmacy. The displayed specification and medical treatment data show information, such as the receipt number of a bill to which the specification is attached, specification serial number, patient's personal data and treatment days, name of disease, start date of medical care, medical treatments performed, fees for each treatment, and medical fee calculation. The examiner reviews the medical treatment data in the specification displayed on the examiner terminal 40 and conducts an examination on the specification. Medical treatments can be classified according to the kinds of medical institutions, i.e. medical/dental treatment, herbal treatment, pharmacy treatment and public health center treatment. The examiner adjusts the amounts of billed items (unit price, daily dosage, total dosage, billed amount, code, etc.) in each specification, and inputs any adjustment in the examiner terminal 40 to indicate the adjusted item. Regarding a treatment of the same code, the examiner can make a line number adjustment or a total amount adjustment. In case of a line number adjustment, the examiner terminal 40 indicates the adjustment detail in the corresponding line number. Also, the examiner terminal 40 may indicate any adjustment inputted during examination by at least one method of: singular adjustment for adjusting a code, unit price, daily dosage or total dosage; aggregate queue adjustment for adjusting the whole amounts of line numbers which are identical in unadjusted code, unit price, daily dosage and total dosage; plural adjustment for simultaneously adjusting items of multiple line numbers for the same reason or type of

adjustment; compulsive adjustment for inputting an adjusted amount when an item is not expressed by (unit price x daily dosage x total dosage); and associated adjustment for adjusting items of two or more line number in association with each another and inputting an adjusted amount in a first associated adjustment line. The examiner terminal 40 indicates the items adjusted by the above adjustment in a statement of examination adjustment. Also, in case of a total amount adjustment, the examiner terminal 40 may make the total amount adjustment and partial specification adjustment in each specification. The total amount adjustment is done on items, such as incorrect calculation, insufficiency to receive benefits, non-benefit items, 100/100 user charge items in medical benefits, double billing, and medical benefits applied for after expiration of the prescription period. The examiner terminal 40 may add the adjustment inputted by the examiner during examination to the statement of examination adjustment. In addition, the examiner terminal 40 may request that the examination commissioner terminal 50 conduct an on-screen examination according to the examiner's input during the examination.

[92] FIG. 13 shows an aggregate queue adjustment performed on an examiner terminal. The examiner can input a code corresponding to the reason for adjustment in the examiner terminal 40. In order to entrust an examination commissioner with examination, the examiner should input a corresponding examination commissioner code. The code (reason for adjustment) inputted during the aggregate queue adjustment can be the same as that used during the medical treatment data adjustment. Also, upon a request inputted by the examiner, the examiner terminal 40 searches for a master file corresponding to the treatment code and displays the detected master file. FIG. 14 shows a master file search window generated on a display screen of an examination terminal. The examiner terminal 40 sends the inputted code of treatment to the bill examination server 20. The bill examination server 20 then sends information on a master file corresponding to the code to the examiner terminal 40.

[93] A specification may include an item named "specific." When the examiner selects the "specific" item, the examiner terminal 40 displays the details of the specific item which were inputted by a pertinent medical institution. The specific item provides information added to the description of specific treatment (dispensing) or billing, such as injury causes, specific codes, or codes of exceptions to the separation of dispensing and prescription. The injury causes are classification codes assigned to various causes of diseases according to the "Korean Standard Classification of Disease Causes." In the specific item, only an English initial (for example, V, W, X or Y) is used to indicate an injury cause. The specific codes are assigned to patients suffering from chronic renal failure, cancer or hemophilia, patients who need stem cell transplantation, and patients who have undergone transplantation (liver, heart or pancreas). The codes of exceptions

to the separation of dispensing and prescription are used in case of dispensing or medication in a medical institution (which can be either a medical clinic or a health care center) in the event of exceptions for the separation. The specific item describes a corresponding code.

[94] FIG. 15 shows general specification items displayed on an examiner terminal. FIG. 16 shows original billing data displayed on an examiner terminal. The displayed picture for checking general specification items in FIG. 15 includes a button for selecting original billing data. When the button is selected, the examiner terminal 40 displays original billing data so that the examiner can review the data during examination.

[95] A specification may include an item named"100." When the examiner selects the "100" item, the examiner terminal 40 displays 100/100 user-charge treatment data which includes 100/100 treatment (dispensing) or prescription data. FIG. 17 shows 100/100 user-charge treatment data displayed on an examiner terminal. The display of 100/100 user-charge treatment data includes a button for selecting original billing data at a top portion thereof. When the button is selected, the examiner terminal 40 displays original billing data as illustrated in FIG. 16 so that the examiner can review the data during examination.

[96] Also, when a line number of a particular code is selected in a specification, the examiner terminal 40 displays data corresponding to the line number. FIG. 18 shows data displayed upon a line number selection on an examiner terminal. The data can be displayed in a pop-up manner. The display of the data corresponding to a selected line number includes a button for selecting original billing data as illustrated in FIG. 16 so that the examiner can review the data during examination.

[97] In addition, the examiner terminal 40 enables the examiner to register or review the records of examination by medical institutions (details and indexes of examination), to prepare or review any request for examination and results (any request for entrusting an examination commissioner with examination and a corresponding examination decision), to decide a failure to examine (unexaminable specifications) or withhold examination, to modify general items (number of consultations, consulting fees, injury causes or the like), to output a specification, to register examination reference data submitted by a medical institution, and to register or review fees for testing sensitivity to an anti-tuberculosis agent.

[98] The examiner terminal 40 can also display a medical treatment specification of a selected public health center. FIG. 19 shows a medical treatment specification of a public health center which is displayed on an examiner terminal for on-screen examination. The displayed specification includes basic information on the health center, receipt number, examiner's name, 100/100 button of each specification serial number,

medical care receiver data and disease, and treatment cost. The examiner terminal 40 displays detailed medical treatment data of a selected specification serial number. FIG. 20 shows medical treatment data displayed on an examiner terminal upon selection of a specification of a public health center. The picture displaying medical treatment data shows codes, details of medical services, admitted amounts of medical fees according to the examination results, and any adjustment after automatic inspection and specialist inspection at an upper portion thereof. The picture displaying medical treatment data shows an admitted amount of medical fees for each medical service at a lower portion thereof. The picture displaying medical treatment data for an on-screen examination of medical care benefits may also display prescription data added to the specification which was selected by clicking a corresponding specification serial number. The prescription data shows codes, names of drugs, daily dosage and total dosage of each drug. The examiner terminal 40 reflects modifications made by the examiner to correct the medical treatment data displayed for the on-screen examination. The examiner can adjust the data included in a specification using an adjustment method, such as singular adjustment, aggregate queue adjustment, plural adjustment, compulsive adjustment and associated adjustment. The examiner terminal 40 includes adjusted matters and any notices in a statement of examination adjustment and send the statement to the bill examination server 20. The bill examination server 200 stores the statement of examination adjustment in the examination database 22. For a bill of which examination has been completed, the examiner terminal 40 informs the management terminal 30 of the completion of examination. Then the management terminal 30 closes examination of the bill and terminates the examination procedure.

[99] In the step (S85) of sending results of an on-screen examination conducted by an examination commissioner, the examination commissioner terminal 50 sends results of examination conducted by the examination commissioner on the bills and specifications entrusted by the examiner terminal 40. If a specialized medical judgment is needed to determine appropriateness of a medical treatment, the examiner terminal 40 may send bills and specifications to the examination commissioner and entrust the commissioner with examination of the bills and specifications. Like the examiner terminal 40, the examination commissioner terminal 50 displays the received bills and specifications so that the examination commissioner can conduct an on-screen examination. Upon completion of examination, the examination commissioner terminal 50 sends information on the examination completion to the management terminal 30 and also delivers a statement of examination adjustment to the bill examination server 20.

[100] In the step (S90) of generating and sending an examination decision file, the bill examination server 20 generates an examination decision file based on the statement of

examination adjustment received from the examiner terminal 40 and the adjusted bills and specifications, and sends the generated examination decision file to the national health insurance corporation server 300. More specifically, the examination decision file is generated based on the statement of examination adjustment received from the examiner terminal 40 and the adjusted bills and specifications, stored in the examination database 22, and sent to the national health insurance corporation server 300. Also, the bill examination server 20 sends the examination decision file to the corresponding medical institution server 200 through the transmit/receive server 10.

[101] In the step (S100) of receiving eligibility appraisal results for medical care receivers, the bill examination server 20 receives the results of appraisal on each medical care receiver's eligibility, which are included in the examination decision file, from the national health insurance corporation server 300. Also, the bill examination server 30 updates information stored in the examination reference database according to the eligibility appraisal results which show a medical care receiver s eligibility to receive health insurance benefits. If a specification naming the same medical care receiver is received at a later time, the bill examination server 20 can check the eligibility item in the specification by reference to the updated eligibility information.

[102]

Claims

[1] A method for electronic examination of medical feesusing a medical fee electronic examination system which includes: a transmit/receive server having a primitive database and communicating with each medical institution server through a communication relay center and a network; a bill examination server having an examination database, an examination reference database and a portal receipt database and communicating with each medical institution server, a health insurance corporation server and the transmit/receive server; a management terminal and examiner terminals communicating with the bill examination server, said method comprising the steps of:

a bill and specification receiving step in which the transmit/receive server accesses the communication relay center, receives medical bills and specifications sent from each medical institution and stores the received medical bills and specifications in the primitive database;

a bill and specification receipt registering step in which the bill examination server receives the bills and specifications from the transmit/receive server, assigns a receipt number to each bill, registers the receipt and stores the received bills and specifications in the examination database;

a description inspection step in which the bill examination server inspects descriptions in the received bills and specifications, including basic information on each medical institution and bill classification, and sends a notice of return to a corresponding medical institution server if any errors or omissions are detected in descriptions of a bill or a specification;

an automatic inspection step in which the bill examination server performs an automatic inspection on the specifications on which description inspection has been completed in order to detect any error in items billed, including a reference price applied, fees calculated and benefits applied for, and corrects the detected error or inserts a message into a corresponding specification;

a specialist inspection step in which a specialist checks the specifications on which automatic inspection has been completed or corrected specifications to determine whether items, such as medical fees, drug prices, drug dispensing fees and injection fees, are correct, and corrects any incorrect item or inserts a message into a corresponding specification;

a computational examination step in which the bill examination server performs a computational examination on the specifications on which specialist inspection has been completed in order to detect any treatment or dosage exceeding a preset limit in items including cold and medication use evaluation, and adjusts a billed

amount or inserts a message into a corresponding specification if an excessive treatment or dosage is detected;

a bill and specification distribution step in which the management terminal receives a list of bills and specifications, on which computational examination has been completed and which are subject to on-screen examination, from the bill examination server and distributes the bills and specifications to the examiner terminals;

an on-screen examination result sending step in which each examiner terminal receives the distributed bills and specifications from the bill examination server, allows an examiner to input examination results for the bills and specifications, and sends the inputted examination results to the bill examination server; and

an examination decision file generating and sending step in which the bill examination server generates an examination decision file based on the examination results received from each examiner terminal and adjusted bills and specifications, and sends the examination decision file to the medical institution server and the national health insurance corporation server.

[2] The method according to claim 1, wherein said description inspection step includes detecting whether over a predetermined rate of specifications attached to a bill are erroneous, and sending a notice of return to return the bill and all the specifications attached thereto.

[3] The method according to claim 1, further comprising after the automatic inspection step:

an erroneous specification sending step in which the bill examination server sends a specification having an error in automatic inspection items which are assigned automatic inspection codes to the portal receipt database; and

a corrected specification receiving step in which the bill examination server receives a specification with the error corrected by the medical institution server and performs an automatic inspection on the corrected specification.

[4] The method according to claim 3, wherein said automatic inspection items assigned automatic inspection codes include at least one of an error in estimation of a unit price, an error in a fee code, an error in application of a reference medical fee, an error in calculation of a billed amount, an item of non-benefits or user charge in whole, a failure to submit a reference document, an error in code classification, an error or omission in the inspection authority number or request date of inspection if inspection was entrusted to an inspection authority, and arbitrary direct dispensing.

[5] The method according to any of claims 1 to 4, wherein said automatic inspection step is carried out by the bill examination server based on a master file including

information necessary for the examination of automatic inspection items and stored in the examination reference database.

[6] The method according to claim 1, wherein said computational examination on the cold item is performed to check a specification relating to acute respiratory infection and adjust a billed amount or indicate the adjustment in a statement of examination adjustment if any treatment or dosage exceeding a preset limit is detected in the specification, and wherein said inspection on the medication use evaluation item is performed to detect any improper prescription of medications which are prohibited to be taken together or at certain ages, and indicate the improper prescription in the statement of examination adjustment.

[7] The method according to claim 1, wherein said bill and specification distribution step performed by management terminal displays a list of bills to be distributed according to predetermined conditions, such as dates of receipt and medical institutions, and distributes the bills and specifications attached thereto to selected examiner terminals using an automatic distribution or division distribution method.

[8] The method according to claim 1, wherein said on-screen examination result sending step further includes: sending the bills and specifications distributed to each examiner terminal to an examination commissioner terminal to entrust the examination of the bills and specifications; and sending examination results inputted from the examination commissioner terminal to the bill examination server.

[9] The method according to claim 1, further comprising after the examination decision file generating and sending step: an eligibility appraisal result receiving step in which the bill examination server receives results of appraisal of medical care receivers eligibility from the national health insurance corporation server and updates information stored in the examination reference database according to the eligibility appraisal results.

[10] The method according to claim 1, wherein said on-screen examination result sending step performed by the examiner terminal indicates any adjustment inputted by at least one method of singular adjustment, aggregate queue adjustment, plural adjustment, compulsive adjustment and associated adjustment in the statement of examination adjustment.

[11] The method according to claim 1, wherein said the on-screen examination result sending step performed by the examiner terminal indicates an adjustment made on at least one item of a calculation error, insufficiency to receive benefits, a non-benefit item and a 100/100 user charge item, in the statement of examination adjustment.

[12] The method according to claim 1, wherein said the on-screen examination result sending step performed by the examiner terminal displays medical service inquiry data, displays 100/100 medical service inquiry data when a 100/100 user charge item is clicked, and displays details of a particular item when the particular item is clicked.