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DIFFERENTIAL DISEASE SEARCH SYSTEM, DIFFERENTIAL DISEASE SEARCH PROGRAM, AND DIFFERENTIAL DISEASE SEARCH METHOD

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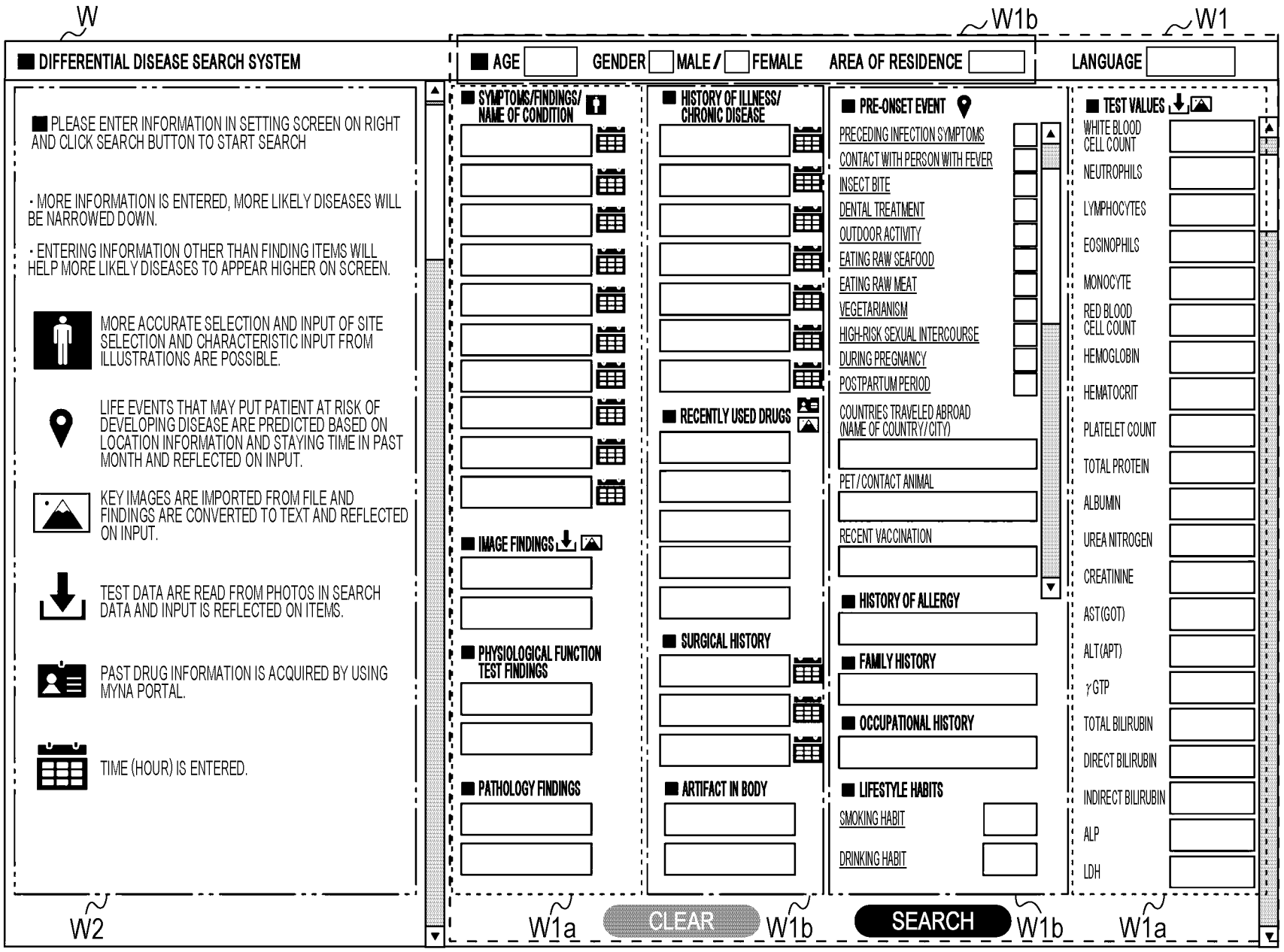
ABSTRACT

The present invention is a differential disease search system including a database, a disease candidate specifying unit, and a ranking unit, in which the database stores disease characteristic information in which disease information related to a disease is associated with symptom finding information related to a symptom and/or a finding that can occur in the disease, and disease relationship information indicating a degree of relationship between a disease and a history of a patient, the disease candidate specifying unit receives symptom input information regarding a patient suffering from a certain disease, the information being related to a symptom and/or a finding observed in the patient, and specifies a disease candidate on the basis of the symptom input information and the disease characteristic information, and the ranking unit receives patient history information and ranks the specified disease candidate on the basis of the patient history information and the disease relationship information.

FIG. 4


W
W1b
W1
DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
PLEASE ENTER INFORMATION IN SETTING SCREEN ON RIGHT AND CLICK SEARCH BUTTON TO START SEARCH
• MORE INFORMATION IS ENTERED, MORE LIKELY DISEASES WILL BE NARROWED DOWN.
• ENTERING INFORMATION OTHER THAN FINDING ITEMS WILL HELP MORE LIKELY DISEASES TO APPEAR HIGHER ON SCREEN.
MORE ACCURATE SELECTION AND INPUT OF SITE SELECTION AND CHARACTERISTIC INPUT FROM ILLUSTRATIONS ARE POSSIBLE.
LIFE EVENTS THAT MAY PUT PATIENT AT RISK OF DEVELOPING DISEASE ARE PREDICTED BASED ON LOCATION INFORMATION AND STAYING TIME IN PAST MONTH AND REFLECTED ON INPUT.
KEY IMAGES ARE IMPORTED FROM FILE AND FINDINGS ARE CONVERTED TO TEXT AND REFLECTED ON INPUT.
TEST DATA ARE READ FROM PHOTOS IN SEARCH DATA AND INPUT IS REFLECTED ON ITEMS.
PAST DRUG INFORMATION IS ACQUIRED BY USING MYNA PORTAL.
TIME (HOUR) IS ENTERED.
SYMPTOMS/FINDINGS/ NAME OF CONDITION
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
W2
W1a
CLEAR
W1b
SEARCH
W1b
W1a

DIFFERENTIAL DISEASE SEARCH SYSTEM, DIFFERENTIAL DISEASE SEARCH PROGRAM, AND DIFFERENTIAL DISEASE SEARCH METHOD

DESCRIPTION

BACKGROUND

Technical Field

[0001]

The present invention relates to a differential disease search system, a differential disease search program, and a differential disease search method.

Related Art

[0002]

Due to the influence of diversification of clinical tests and treatments, complication of medical fee addition request work, an increase in medical examinees from foreign countries, and the like, the number of work hours required for medical care of one patient at a clinical site is continuously increasing, and the clinical site is extremely busy. In particular, an inquiry, an examination, and test work for a first time patient who is in a non-diagnosed state are complicated, and burdens and the exhaustions of the emergency physician and the internist involved therein are significant, and the number of doctors in the same department continues to decrease. For this reason, it is becoming quite difficult to maintain and improve the medical quality when an appropriate diagnosis is made for a

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patient whose diagnosis has not been confirmed and treatment is advanced. Further, the number of patients that can be handled per unit time is limited in a conventional personalized medical care mode by a doctor, and there is no end to patients who cannot receive an appropriate diagnosis due to insufficient interview, examination, and lack of test, and suffer disadvantages due to erroneous diagnosis and late diagnosis. Here, considering a medical practice from the viewpoint of information processing, the process of diagnosing a disease (an inquiry, examination, and test process to a patient) is all an information collection process for giving a diagnosis, and the act of a doctor considering diagnosis is specification of a disease by collating collected information with a clinical image of a known disease.

[0003]

On the other hand, the specification of a disease by comparison between information collected in the related art and a clinical image of the disease displays search results of a site including related information with a medical book or site information on the Internet, PDFs of medical theses, and the like as a search range, and a possible disease cannot be comprehensively searched for a certain symptom or finding. In addition, it is necessary to read information on a site, medical books, and medical papers, and it is not possible to respond to needs of a medical site where rapid specification of diseases is required. On

the other hand, for example, JP 2023-177575 A proposes an example of a system that supports specification of a disease for a certain symptom or finding.

[0004]

For example, JP 2023-177575 A describes that when input of symptom input information is received and new symptom input information is further received, it is determined whether or not pieces of symptom cluster information of a plurality of pieces of symptom input information is the same, and when symptom clusters are different, common disease information among pieces of disease information associated with respective pieces of the symptom input information is specified as differential disease information, and when the pieces of symptom cluster information are the same, all pieces of disease information associated with the respective pieces of symptom input information are specified as differential disease information.

SUMMARY

[0006]

However, in JP 2023-177575 A, since a symptom is selected from a preset symptom list, there is a problem that the degree of freedom in search is low, and there is a functional limit that it is not possible to answer a wide range of search needs of users. Further, in JP 2023-177575 A, the user is assumed to be a doctor, and retrieval by

medical terminology is mainly performed. Therefore, in JP 2023-177575 A, there is a limitation on users who can use the system, and it is difficult for medical professionals other than doctors such as nurses to use the system, and retrieval of diseases by general users is not assumed. However, practice of team medical care is mainly performed in current clinical practice, and it is currently required in the medical care field to be able to cope with a possible disease even in a specialized occupation such as a nurse or a laboratory technician other than a doctor. Furthermore, there is a problem of asymmetry of medical knowledge between patient medical practitioners, and there is a demand for a system in which general users can easily know a possible disease by inputting symptoms and findings of themselves and family members. Further, since JP 2023-177575 A does not have a function of ranking diseases, there is a possibility that even a disease having a low onset frequency can be displayed in a high rank, and it is considered that there is a problem in practicality.

[0007]

In view of the above problems, an object of the present invention is to provide a technology that enables a general user to input his/her symptoms and/or findings and specify a possible disease in an optimal display order, in addition to use of the technology for supporting diagnosis work of a wide range of medical practitioners including doctors.

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[0008]

In order to solve the above problems, the present invention is a differential disease search system for searching for a disease, the differential disease search system including a database, a disease candidate specifying unit, and a ranking unit, in which the database stores disease characteristic information in which disease information related to a disease is associated with symptom finding information related to a symptom and/or a finding that can occur in the disease, and disease relationship information indicating a degree of relationship between a disease and a history of a patient, the disease candidate specifying unit receives input of symptom input information regarding a patient suffering from a certain disease, the information being related to a symptom and/or a finding observed in the patient, and specifies a disease candidate on the basis of the symptom input information and the disease characteristic information, and the ranking unit receives input of patient history information and ranks the specified disease candidate on the basis of the patient history information and the disease relationship information.

[0009]

In a more preferred embodiment, the disease relationship information includes a relationship index associated with each combination of onset risk information and a disease, and the ranking unit calculates, for each of

the diseases, a relationship integration value obtained by accumulating the relationship index corresponding to the patient history information on the basis of the disease relationship information and the input patient history information, and ranks the disease candidate on the basis of the relationship integration value.

[0010]

With such a configuration, it is possible to specify a disease candidate by using the information related to a symptom and/or a finding of a patient, and it is possible to rank the specified disease candidate by using the information regarding the history of the patient. Thus, the user can easily search for a disease that affects the patient.

[0011]

In a more preferred embodiment, the differential disease search system further includes a symptom specifying unit, and a display processing unit, in which the database stores disease characteristic information in which the symptom finding information is associated with symptom detailed information of a symptom and/or a finding, the symptom specifying unit specifies the symptom detailed information on the basis of the input symptom input information, the display processing unit performs display processing of the specified symptom detailed information so as to enable designation, and the disease candidate specifying unit specifies the symptom finding information

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on the basis of the designated symptom detailed information and the disease characteristic information.

[0012]

In a more preferred embodiment, the database stores, as the symptom detailed information, one or a plurality of symptom finding images in which symptoms and/or findings are imaged, in association with the symptom finding information, the symptom specifying unit specifies the symptom finding image on the basis of the input symptom input information, the display processing unit performs display processing of the specified symptom finding image so as to enable designation, and the disease candidate specifying unit specifies the symptom finding information on the basis of the designated symptom finding image and the disease characteristic information.

[0013]

In a more preferred embodiment, the differential disease search system further includes a symptom specifying unit, and a display processing unit, in which the database stores disease characteristic information in which the symptom finding information and an onset site are associated, the display processing unit performs display processing of a site designation image that enables designation of the onset site, the symptom specifying unit receives selection input of the onset site via the site designation image and specifies the symptom finding information on the basis of the selectively input onset

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site and the disease characteristic information, and the display processing unit performs display processing of the specified symptom finding information so as to enable designation.

[0014]

With such a configuration, it is possible to cause information regarding a symptom that is not grasped by the user to be displayed for the user, and it is possible to prevent omission of input of the symptom. Thus, the user can specify a more accurate disease candidate.

[0015]

In a more preferred embodiment, the differential disease search system further includes a display processing unit, in which the database stores disease-related information, the disease-related information has a hierarchical structure in which a certain disease is an upper disease and a disease causing the upper disease is a lower disease, and the display processing unit performs display processing of the specified disease candidate and the lower disease of the disease candidate in association with each other.

[0016]

With such a configuration, it is possible to display a disease that is not directly associated with the specified disease but can be evoked from the disease. Thus, it is possible to assist the user to recall the disease and to prevent erroneous diagnosis.

[0017]

In a more preferable mode, the differential disease search system further includes a display processing unit, in which the database stores onset risk information in which position information is associated with an onset cause candidate, and the display processing unit performs display processing of the onset cause candidate so as to enable designation as the patient history information on the basis of past position information of a user and the onset risk information.

[0018]

With such a configuration, it is possible to display an onset risk of a disease so as to enable designation using past position information of the user, and the user can input the onset risk even in a case where the user forgets the onset risk of a disease. Thus, the user can specify a more accurate disease candidate.

[0019]

In a more preferred embodiment, the database stores a combination of an area of residence, age, and gender of a patient and/or an onset time of a symptom and a morbidity for each disease, and the ranking unit receives input of the area of residence, age, and gender of the patient and/or the onset time of the symptom as the patient history information, and ranks the disease candidate using the morbidity for each disease based on the area of residence, age, and gender of the patient and/or the onset time of the

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symptom.

[0020]

With such a configuration, the user can specify a disease candidate using the morbidity for each disease. Thus, the user can specify a more accurate disease candidate.

[0021]

The present invention has an effect of providing not only an application of support for diagnosis work of medical practitioners including doctors but also a technique enabling general users to input their symptoms and/or findings and specify a possible disease in an optimal display order.

BRIEF DESCRIPTION OF DRAWINGS

[0022]

FIG. 1 is a block diagram illustrating a configuration of a system according to an embodiment;

FIGS. 2A and 2B are hardware configuration diagrams of the system according to the embodiment;

FIG. 3 is a functional block diagram of a device according to the embodiment;

FIG. 4 is an example of a disease search screen according to the embodiment;

FIG. 5 is a processing flowchart of the system according to the embodiment;

FIG. 6 is an example of a disease search screen

according to the embodiment;

FIG. 7 is an example of the disease search screen according to the embodiment;

FIG. 8 is an example of the disease search screen according to the embodiment;

FIG. 9 is an example of the disease search screen according to the embodiment;

FIG. 10 is an example of the disease search screen according to the embodiment;

FIG. 11 is an example of the disease search screen according to the embodiment;

FIG. 12 is an example of the disease search screen according to the embodiment; and

FIG. 13 is an example of the disease search screen according to the embodiment.

DETAILED DESCRIPTION

[0023]

Hereinafter, the present invention will be described in more detail with reference to the accompanying drawings. A preferred embodiment is illustrated in the drawings. However, it can be implemented in many different forms and is not limited to the embodiments described herein.

[0024]

For example, in the present embodiment, the configuration, operation, and the like of the differential disease search system will be described, but methods,

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devices, computer programs, and the like having similar configurations can also exhibit similar effects. In addition, a program may be stored in a recording medium or may be provided in a downloadable manner from an external server. Further, by using this recording medium, for example, the program can be installed in a computer, whereby a differential disease search device and a differential disease search system can be configured. Here, the recording medium storing the program may be a non-transitory recording medium such as a CD-ROM.

[0025]

In the present embodiment, the "unit" may include, for example, a combination of hardware resources implemented by a circuit in a broad sense and information processing of software that can be specifically implemented by these hardware resources. In the present embodiment, the "information" is represented by, for example, a physical value of a signal value representing a voltage or a current, a level of a signal value as a binary bit set including 0 or 1, or a quantum superposition (so-called quantum bit), and communication and calculation can be executed on a circuit in a broad sense. The circuit in a broad sense is a circuit implemented by appropriately combining a circuit, circuitry, a processor, a memory, and the like. That is, the circuit in a broad sense includes a central processing unit (CPU), a graphics processing unit (GPU), a large scale integration (LSI), an application

specific integrated circuit (ASIC), a field-programmable gate array (FPGA), and the like.

[0026]

The present invention relates to a differential disease search system that searches for one or more disease candidates that a patient may be suffering from. The present invention accepts input of symptoms and findings observed in a patient from a user, thereby specifying a disease candidate that the patient suffers from. Then, the specified disease candidates are sorted and displayed in descending order of the possibility of onset.

[0027]

The findings in the present embodiment refer to a state observed when a doctor examines or tests a patient, and physical findings, image findings, test findings, and physiological function test findings are used. In the present invention, findings found from all image test results such as ultrasonic examination, computed tomography (CT), magnetic resonance imaging (MRI), radio isotope (RI), and endoscopic examination can be used as the image findings; findings found from results of a specimen test, a pathological test, and/or a genetic test can be used as the test findings; and findings found from an electrocardiogram, an electroencephalogram, an electromyogram, a respiratory function test, and the like can be used as the physiological function test findings.

[0028]

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Further, in the present embodiment, a disease indicating a disease state is also referred to as a disease. For example, "anemia" is a disease name indicating a disease state indicating a decrease in red blood cells, and "anemia" which is a disease state is also treated as a disease. Furthermore, the user in the present embodiment includes a medical practitioner engaged in medical care and an ordinary person having poor medical knowledge, and hereinafter, these are collectively referred to as "users" unless otherwise specified.

[0029]

<1. System configuration>

FIG. 1 is a block diagram illustrating a configuration of a system according to an embodiment. As illustrated in FIG. 1, a differential disease search system 0 includes a differential disease search device 1 and a user terminal device 3. In the present embodiment, the differential disease search device 1 and the user terminal device 3 are configured to be communicable via a communication network NW. The communication network NW in the present embodiment is an Internet Protocol (IP) network when the user terminal device 3 is a terminal device used by ordinary people, but there is no limitation on the type of communication protocol, and further, there is no limitation on the type and scale of the network. Further, in a case where the user terminal device 3 is a terminal device used by a medical practitioner, the communication

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network NW is a local area network (LAN) or an intranet, but the scale of the communication network NW is not limited.

[0030]

As the differential disease search device 1 in the present embodiment, a computer or a personal computer for a general-purpose server can be used. Furthermore, as the user terminal device 3, a smartphone, a tablet terminal, a personal computer, a wearable device, or the like can be used. In addition, the differential disease search device 1 may include a plurality of computers capable of transmitting and receiving information by the communication network NW or another network.

[0031]

<1.1. Hardware configuration of present invention>

FIGS. 2A and 2B are hardware configuration diagrams of the differential disease search system 0. As illustrated in FIG. 2A, the server 10 (differential disease search device 1) includes a processing unit 101, a storage unit 102, and a communication unit 103.

[0032]

The processing unit 101 includes one or a plurality of processors such as a CPU capable of executing an instruction set, and controls the entire operation processing of the differential disease search device 1 by executing the differential disease search program, the OS, and other applications according to the present invention.

The storage unit 102 includes a volatile memory such as a RAM capable of storing a command set, and a nonvolatile recording medium such as an HDD or an SSD capable of recording an OS, a generation program according to the present invention, and the like.

The communication unit 103 includes a communication interface device with the communication network NW, and executes communication control with the communication network NW to input and output information.

[0033]

As illustrated in FIG. 2B, the terminal device 9 (user terminal device 3) includes a processing unit 91, a storage unit 92, a communication unit 93, an input unit 94, and an output unit 95.

[0034]

The processing unit 91 includes one or more processors such as a CPU capable of executing a command set, and executes the OS and other applications to control the entire operation processing of the terminal device 9.

The storage unit 92 includes a volatile memory such as a RAM capable of storing a command set and a nonvolatile recording medium such as an HDD or an SSD capable of recording an OS or the like. Further, the storage unit 92 stores position information of the terminal device 9 from the present to the past for a predetermined period.

The communication unit 93 includes a communication interface device for connecting to a network, and executes

communication control with the communication network NW to input and output information.

The input unit 94 includes an input device capable of performing input processing such as a keyboard and a touch panel.

The output unit 95 includes a display device capable of performing display processing such as a display.

[0035]

Note that, in the present embodiment, the output unit 95 of the user terminal device 3 outputs and displays a disease search screen to be described later by display processing by a display processing unit of the differential disease search device 1, but the differential disease search device 1 may include an input unit and an output unit, and may be configured to receive input via the input unit or perform various outputs via the output unit. In this case, the differential disease search device 1 constitutes the differential disease search system 0.

[0036]

<1.2. System functional configuration>

FIG. 3 is a functional block diagram of the differential disease search device 1 according to a first embodiment. As illustrated in FIG. 3, the differential disease search device 1 includes a registration unit 11, a disease candidate specifying unit 12, a ranking unit 13, a symptom specifying unit 14, a test specifying unit 15, a code issuing unit 16, a display processing unit 17, and a

database 2. Information processing by the software stored in the storage unit 102 is specifically implemented by hardware (processing unit 101).

[0037]

Note that the system configuration in the present embodiment is a so-called server-client type in which a client receives a processing result performed by the differential disease search device 1 (server) in response to a request from the user terminal device 3 (client). On the other hand, it may be a so-called stand-alone type in which the differential disease search program is activated in the client terminal. In this case, the user terminal device 3 may include some or all of functional configurations (units) of the differential disease search device 1. For example, the user terminal device 3 may include the registration unit 11, the disease candidate specifying unit 12, the ranking unit 13, the symptom specifying unit 14, the test specifying unit 15, the code issuing unit 16, the display processing unit 17, and the like, and the differential disease search device 1 may be a cloud storage that manages information such as disease basic information.

[0038]

<1.3. Registration unit 11>

The registration unit 11 stores disease basic information, disease characteristic information, related test information, disease-related information, onset risk

information, disease relationship information, symptom finding unifying master, and onset risk unifying master in the database 2.

[0039]

<1.3.1. Disease basic information>

The disease basic information is information for managing a disease to be displayed to the user. As the disease basic information, a disease ID for uniquely specifying a disease, a current disease name, an integrated code, a category, an identical disease name, an old disease name, an abbreviation notation, an English notation as a basis for abbreviation notation, a registration date, a correction date, a correction content, a correction reason, a final update date, a registrant name, and an approver are registered.

[0040]

Here, as the current disease name, a disease name that is normally used in each period is set with reference to guidelines on diseases, the ICD-10 standard disease name master, and the like. The integrated code is a code of a world standard, and disease codes of ICD-10 and ICD-11 of WHO are set. The identical disease name is registered when there is a plurality of names for one disease.

[0041]

Note that, in the present embodiment, the disease ID is identification information unique to the present system, but an integrated code may be used.

[0042]

<1.3.2. Disease characteristic information>

The disease characteristic information is master information regarding onset characteristics of each disease. As the disease characteristic information, disease information, symptom finding information, and evidence information are registered. As the disease information, a disease ID, an onset mode, a morbidity, infectivity information, heritability information, and an age distribution of the onset person are registered. Note that the disease information may include information of disease basic information.

[0043]

Here, the onset mode is a manner of onset of a disease, and acute, subacute, chronic, protraction, and the like are used. As the morbidity, morbidity by population, morbidity by age (combination of age and morbidity for each disease), morbidity by region (combination of region and morbidity for each disease), morbidity by gender (combination of gender and morbidity for each disease), and morbidity by season (combination of season or period and morbidity for each disease) are set. As the infectivity information, the presence or absence of infectivity and the mode of infection are set. In the heritability information, presence or absence of heritability and a genetic manner are set. As the evidence information, case reports, documents, and the like are registered, which are

information serving as a basis for symptom finding information exhibited by a disease.

[0044]

The symptom finding information is information regarding symptoms and/or findings that may occur in the disease. As the symptom finding information, subjective symptoms, physical findings including vital information, image findings, pathological findings, physiological function test findings, and test data are registered for each disease.

[0045]

The subjective symptoms and the physical findings are information regarding symptoms observed in the patient, and are registered in association with symptom detailed information related to the symptoms and/or findings. Here, the symptom detailed information includes the onset mode, symptom intensity, property, exacerbation factor, remission factor, associated symptom, and preceding symptom as major items, and detailed symptom items corresponding to the subjective symptom and the physical findings are set for each major item. Further, as the symptom detailed information, a symptom finding image which is an image obtained by photographing an onset symptom is registered. In addition, the subjective symptom and the physical findings may be registered in association with the onset site where the symptom is observed.

[0046]

The test data is data generally obtained in a clinical site, and results of blood counts, biochemical tests, urinalysis, blood gas analysis, and the like are registered.

[0047]

<1.3.3. Related test information>

The related test information is information related to a test for identifying a disease. As the related test information, a test ID for uniquely specifying a test, a test name, a test item, and a disease ID are registered.

[0048]

<1.3.4. Disease-related information>

The disease-related information is information indicating a relationship between diseases. As the disease-related information, a plurality of diseases having a hierarchical structure is registered. In the present embodiment, one or more diseases are registered in each hierarchy. Further, in the following description, a disease at an upper level in the hierarchical structure is referred to as an upper disease, and a disease that causes the upper disease or a detailed classification disease obtained by classifying the upper disease in detail is referred to as a lower disease. In addition, the number of hierarchies of lower diseases for each upper disease may be one or two or more. Note that a lower disease separated by two or more layers may be a disease that indirectly causes an upper disease and coexists with the upper disease.

[0049]

<1.3.5. Onset risk information>

The onset risk information is information regarding a cause of onset of a disease. As the onset risk information, risk drug information, preceding risk event information, preceding risk symptom information, risk chronic disease information, risk medical history information, risk medical practice information, risk lifestyle habit information, and risk occupation information are registered.

[0050]

The risk drug information is information related to a drug having an onset risk for each disease, and a combination of a plurality of drugs and a disease ID are registered in association with each other.

[0051]

The preceding risk event information is information regarding an action performed prior to the onset of the disease, and an onset cause candidate and a disease ID are registered in association with each other. Further, in the present embodiment, the onset cause candidate and position information where the action is performed are registered in association with each other.

[0052]

The preceding risk symptom information is information regarding a preceding symptom existing before a disease as a search target is developed, and the symptom to be the

preceding symptom and the disease ID are registered in association with each other. For example, symptoms of viral infection such as "upper respiratory inflammation" are registered in association with the disease "Guillain-Barre syndrome".

[0053]

The risk chronic disease information is information regarding a chronic disease (basal disease) involved in onset of a disease, and a basal disease and a disease ID of a disease as a search target are registered in association with each other. The risk medical history information is information regarding a previous disease involved in the onset of a disease, and a disease ID of a disease that has been developed in the past and is currently cured, and a disease as a search target are registered in association with each other.

[0054]

The risk medical practice information is information related to a performed medical practice involved in the onset of a disease, and the medical practice and the disease ID are registered in association with each other. As the medical practice, a surgical history and an intracorporeal artifact can be used, and for example, a surgical treatment "gastrostomy" is registered in association with "peritonitis". The lifestyle habit information is information about a lifestyle habit involved in the onset of a disease, and is registered in association

with an action customarily performed for a long period of time and a disease ID. For example, habitual behavior such as "no exposure to the sun" is registered in association with "vitamin D deficiency".

[0055]

The risk occupation information is information regarding an occupation involved in the onset of a disease, and an occupation and a disease ID are registered in association with each other. For example, the occupation information "coating industry" is registered in association with "toluene poisoning".

[0056]

<1.3.6. Disease relationship information>

The disease relationship information is master information indicating the degree of relationship between a disease and onset risk information. As the disease relationship information, a relationship index is registered for each combination of a disease as a search target and the onset risk information. For example, in a case where the disease is "influenza infection", to "use of anticancer agent" of risk drug information that is onset risk information, a relationship index of 10 is set; to "use of immunosuppressant", a relationship index of 100 is set; and to "no use of anticancer agent and immunosuppressive agent", a relationship index of 1 is set.

[0057]

<1.3.7. Symptom finding unifying master>

The symptom finding unifying master is master information for integrally managing notation of symptom input information related to a symptom and/or a finding input from a user. As the symptom finding unifying master, a plurality of pieces of symptom input information that can be input from the user is registered for each piece of symptom finding information.

[0058]

<1.3.8. Onset risk unifying master>

The onset risk unifying master is master information for unifying and managing the notation of the patient history information input from the user. As the onset risk unifying master, a plurality of pieces of patient history information that can be input from the user is registered for each onset risk information.

[0059]

<1.4. Disease candidate specifying unit 12>

The disease candidate specifying unit 12 receives input of patient-related information related to a patient suffering from a certain disease and specifies a disease candidate. The disease candidate specifying unit 12 receives input of patient-related information including symptom input information related to symptoms and/or findings observed in a patient, and specifies a disease candidate on the basis of the symptom input information and the disease characteristic information.

[0060]

<1.5. Ranking Unit 13>

The ranking unit 13 receives input of patient-related information related to a patient suffering from a certain disease, and ranks the disease candidates. The ranking unit 13 receives input of patient-related information including patient history information, and ranks the disease candidates on the basis of the patient history information.

[0061]

<1.6. Symptom specifying unit 14>

The symptom specifying unit 14 specifies a symptom and/or a finding associated with the symptom input information input by the user. The symptom specifying unit 14 specifies symptom detailed information on the basis of the symptom input information. Further, the symptom specifying unit 14 specifies a symptom finding image as the symptom detailed information on the basis of the symptom input information. Furthermore, the symptom specifying unit 14 receives selection input of an onset site designated via a site designation image to be described later, and specifies symptom finding information on the basis of the onset site.

[0062]

<1.7. Test specifying unit 15>

The test specifying unit 15 specifies a test for specifying a disease that affects the patient from the specified disease candidate. The test specifying unit 15

specifies test information for specifying a disease on the basis of the specified disease candidate and the related test information.

[0063]

<1.8. Code issuing unit 16>

The code issuing unit 16 issues a code for sharing the specified information with others. The code issuing unit 16 issues a code for displaying the specified disease candidate and the test information.

[0064]

<1.9. Display processing unit 17>

The display processing unit 17 performs display processing of the disease search screen to be displayed to the user, and causes the user terminal device 3 to display the display processing result. FIG. 4 is a display example of a disease search screen displayed on the user terminal device 3.

[0065]

<2. Display example of disease search screen>

A disease search screen W includes an input section W1 (in the illustrated example, a long broken line portion) for inputting patient-related information and a display section W2 (in the illustrated example, a two-dot chain line portion) on which display based on the input of the patient-related information is performed. The input section W1 includes a symptom finding input section W1a (in the illustrated example, a short broken line portion) for

receiving input of symptom input information regarding symptoms and/or findings observed in the patient among the patient-related information, and a history input section W1b (in the illustrated example, a one-dot chain line portion) for receiving input of patient history information among the patient-related information.

[0066]

In the illustrated example, the symptom finding input section W1a includes a plurality of regions for respectively receiving and displaying input of subjective symptoms and physical findings, image findings, physiological function test findings, pathological findings, and test findings, and an icon for displaying a region for inputting the onset time of the symptom. Further, the history input section W1b has a plurality of regions for receiving and displaying medical history input information, chronic disease input information, drug input information, medical practice input information (in the illustrated example, "surgical history" and "intracorporeal artifact" are illustrated), preceding event input information, preceding symptom input information ("history of allergy" in the illustrated example), occupation input information, lifestyle habit input information, and disease basic information of a disease affecting a family member ("family history" in the illustrated example). Furthermore, the history input section W1b has a region that receives input of the age, gender, and area of

residence of the patient. Note that the disease basic information of a disease affecting a family member may be used as information for specifying the disease.

[0067]

In the present embodiment, the input section W1 receives input of text data from the user as symptom input information and patient history information, and the input data is displayed in each area. Further, in the region to which subjective symptoms and physical findings are input, symptom finding information specified by the operation on the display section W2 to be described later is specified and displayed as the symptom input information. In addition, in the region to which the patient history information is input, the onset risk information specified by the operation on the display section W2 to be described later is specified and displayed as the patient history information.

[0068]

In addition, in the region to which an image finding is input in the present embodiment, text data of the image finding is input and displayed as symptom input information from the user who has confirmed the image finding. On the other hand, text data may be acquired using a well-known image recognition AI that specifies a symptom from an image in which a symptom and/or a finding is photographed and outputs text data of the symptom, and the text data may be specified and displayed as symptom input information. Note

that the text data of the symptom may be acquired using, instead of the image recognition AI, a correspondence table in which images of papers and medical journals and text data of symptoms are associated with each other.

[0069]

In the region to which a test finding in the present embodiment is input, text data of a test finding is input and displayed as symptom input information from a user who has confirmed the test data. On the other hand, the test finding may be read from the test data using a well-known OCR technology, and text data of the test finding may be specified and displayed as symptom input information. Note that the symptom input information in the test finding is input or specified on the basis of a reference of test values and a result of comparing the test data. For example, when the test data is "30,000 ≤ white blood cell count", "abnormal increase in white blood cell count" is input or specified as the symptom input information.

[0070]

In addition, in the region for receiving input of drug input information of the history input section W1b in the present embodiment, the drug input information may be read from data related to a drug such as a prescription using a known OCR technology, and text data of the drug input information may be specified and displayed as the patient history information. Further, in cooperation with an external drug information management system, drug input

information acquired from the outside may be specified and displayed as patient history information.

[0071]

<3. Disease search processing flow>

Next, a differential disease search method using the differential disease search system 0 will be described with reference to FIGS. 5 to 13. FIG. 5 is a flowchart illustrating processing until the display section W2 is displayed according to the operation on the input section W1 of the disease search screen W in FIG. 4 and the finally specified disease candidate is displayed.

[0072]

<3.1. Reception of input of symptom input information>

In step S1 (hereinafter, a "step SX" is simply referred to as "SX"), the disease candidate specifying unit 12 receives input of patient-related information including symptom input information. In the present embodiment, the disease candidate specifying unit 12 receives input of patient-related information including symptom input information (subjective symptoms and physical findings, image findings, pathological findings, and test findings) and disease basic information of a disease affecting a family member as information for specifying a disease candidate.

[0073]

Further, in the present embodiment, the disease candidate specifying unit 12 specifies the symptom input

information via a symptom finding image. Specifically, the display processing unit 17 receives an instruction to display a site designation image that enables designation of an onset site from the user, and performs display processing of the site designation image. The symptom specifying unit 14 receives selective input of the onset site via the displayed site designation image, and specifies symptom finding information on the basis of a selectively input onset site and the disease characteristic information stored in the database 2. The display processing unit 17 performs display processing of the specified symptom finding information and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the disease candidate specifying unit 12 specifies the designated symptom finding information as symptom input information.

[0074]

Further, a symptom finding image related to the symptom finding information is displayed so as to enable designation on the basis of the designated symptom finding information, and the disease candidate specifying unit 12 specifies the symptom input information on the basis of the designated symptom finding image. Specifically, the symptom specifying unit 14 specifies one or a plurality of symptom finding images associated with the designated symptom finding information on the basis of the disease

characteristic information, and the display processing unit 17 performs display processing of the specified symptom finding image and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the disease candidate specifying unit 12 specifies symptom finding information associated with the designated symptom finding image on the basis of the disease characteristic information, and specifies the symptom finding information as symptom input information.

[0075]

FIGS. 6 to 7 are display examples of screens displayed on the user terminal device 3 for selecting an onset site and inputting symptom input information. FIG. 6 is an example of a screen on which the site designation image is displayed on the display section W2 by an instruction to display the site designation image (pressing of an icon) being received from the user. In the illustrated example, a whole-body image, an oral image, and a limb image are displayed as the site designation image. Note that an ear/nose image or a detailed image may be displayed.

[0076]

FIG. 7 is an example of a screen displayed when one site designation image is designated in FIG. 6. In the illustrated example, a screen when an oral image is selected and input in FIG. 6 is displayed. Upon receiving

selection input of an onset site of a symptom is received from the user in the oral image displayed by the selection input, a plurality of candidates of symptom finding information associated with the onset site ("swollen tonsil" in the illustrated example) is displayed on the display section W2 so as to enable designation. Then, by the symptom finding information that the patient develops being selectively input from among the plurality of candidates for the symptom finding information, the symptom finding information is specified as symptom input information, and is displayed in the region for inputting the subjective symptom and the physical findings of the input section W1. Further, a plurality of symptom finding images associated with the selected and input symptom finding information is displayed so as to enable designation on the display section W2, the symptom finding information associated with the designated symptom finding information is specified as symptom input information, and the specified symptom input information is displayed in a region for inputting an image finding of the input section W1.

[0077]

Further, as another form of receiving input of symptom input information via a symptom finding image, the disease candidate specifying unit 12 specifies symptom input information via a symptom finding image displayed on the basis of symptom input information input from the user.

Specifically, the symptom specifying unit 14 specifies symptom finding information from the input symptom input information on the basis of the symptom finding unifying master, and specifies one or a plurality of symptom finding images from the symptom finding information on the basis of the symptom finding information and the disease characteristic information. The display processing unit 17 performs display processing of the specified symptom finding image, and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the disease candidate specifying unit 12 specifies symptom finding information associated with the designated symptom finding image on the basis of the disease characteristic information, and specifies the symptom finding information as symptom input information.

[0078]

FIG. 8 is an example of a screen that is displayed on the user terminal device 3 and displays a symptom finding image on the basis of the input symptom input information. In the illustrated example, a plurality of symptom finding images associated with the symptom finding information corresponding to "urine is red" that is input as the symptom input information is displayed on the display section W2. Then, when the symptom finding image corresponding to the symptom or finding is selectively input from the patient, the symptom finding information

associated with the symptom finding image is specified as the symptom input information, and the specified symptom input information is displayed in the region for inputting the subjective symptom and the physical finding of the input section W1 ("brown urine" in the illustrated example).

[0079]

Note that in the present embodiment, the symptom input information and the symptom finding information are associated, and the symptom finding information and the symptom finding image are associated, so that the symptom finding information is specified on the basis of the symptom input information, an image is specified on the basis of the symptom finding information, and the symptom finding information is specified on the basis of the symptom finding image. On the other hand, the symptom input information and the symptom finding image may be associated, the symptom finding information and the symptom finding image may be associated, the symptom finding image may be directly specified from the symptom input information, and the symptom finding information may be specified on the basis of the symptom finding image.

[0080]

In addition, in a case where the user is a medical practitioner, the disease candidate specifying unit 12 may receive input of a detailed symptom on the basis of the input symptom input information and specify the detailed

symptom as the symptom input information. Specifically, the symptom specifying unit 14 specifies symptom finding information from the symptom input information on the basis of the input symptom input information and the symptom finding unifying master, and specifies an item of symptom detailed information associated with the symptom finding information on the basis of the symptom finding information and the disease characteristic information. The display processing unit 17 performs display processing of the specified item of the symptom detailed information, and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the disease candidate specifying unit 12 specifies symptom finding information associated with the designated item of the symptom detailed information on the basis of the designated item of the symptom detailed information and the disease characteristic information, and specifies the symptom finding information as symptom input information. Note that, even when the user is a general user, the disease candidate specifying unit 12 may receive input of a detailed symptom on the basis of the input symptom input information and specify the detailed symptom as symptom input information.

[0081]

FIG. 9 is a display example of a screen that is displayed on the user terminal device 3 of the medical practitioner and specifies symptom input information on the

basis of symptom detailed information. In the illustrated example, symptom detailed information associated with "cough" input as symptom input information from the medical practitioner is displayed on the display section W2, and a detailed symptom item of the symptom detailed information associated with "cough" is displayed so as to enable designation on the display section W2. Then, by receiving designation of a symptom finding observed in the patient among displayed detailed symptom items, the symptom finding is specified as symptom input information.

[0082]

Note that in the present embodiment, the symptom input information and the symptom finding information are associated, and the symptom finding information and the symptom detailed information are associated, so that the symptom finding information is specified on the basis of the symptom input information, the symptom detailed information is specified on the basis of the symptom finding information, and the symptom finding information is specified on the basis of the symptom detailed information. On the other hand, the symptom input information and the symptom detailed information may be associated, the symptom finding information and the symptom detailed information may be associated, the symptom detailed information may be directly specified from the symptom input information, and the symptom finding information may be specified on the basis of the symptom detailed information.

[0083]

As described above, input of the symptom input information for specifying the disease candidate is completed, and then the processing of inputting information for ranking the disease candidates is executed.

[0084]

<3.2. Reception of input of patient history information>

In S2, the ranking unit 13 receives input of patient history information. In the present embodiment, the ranking unit 13 receives input of an area of residence, age, and gender of a patient, symptom onset time, medical history input information, chronic disease input information, drug input information, medical practice input information, preceding event input information, preceding symptom input information, occupation input information, lifestyle habit input information, and disease basic information of a disease affecting a family member as patient history information.

[0085]

Specifically, the ranking unit 13 receives selection input of a displayed onset cause candidate from the user, and specifies patient history information on the basis of the onset cause candidate. More specifically, upon receiving input to activate each region corresponding to the risk medical history information, the risk chronic disease information, the risk drug information, the risk medical practice information, the preceding risk symptom

information, the risk occupation information, and the risk lifestyle habit information, the display processing unit 17 performs display processing of a list of onset cause candidates corresponding to each region and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the ranking unit 13 specifies a designated onset cause candidate as patient history information. The display processing unit 17 displays the specified patient history information in each region.

[0086]

Further, in a case where the preceding event input information is received as patient history information, the ranking unit 13 specifies the patient history information on the basis of past action histories of the user and the onset cause candidate displayed using the onset risk information. Specifically, the display processing unit 17 acquires position information of the user from the present to the past by a predetermined period from the storage unit 92, performs display processing of the onset cause candidate on the basis of the position information and the preceding risk event information and causes the user terminal device 3 to display a display processing result so as to enable designation on the display section W2. Then, the ranking unit 13 specifies a designated onset cause candidate as patient history information.

[0087]

FIG. 10 is a display example of a screen displayed on the user terminal device 3 for receiving input of preceding event input information. In the illustrated example, by an instruction (pressing of an icon) to display the onset cause candidate related to the preceding risk event information being received from the user, the onset cause candidate is displayed on the display section W2 for each past date and position information. Then, by an onset cause candidate being designated, the designated onset cause candidate is specified as patient history information, and is displayed in the area for inputting the preceding event input information.

[0088]

Further, when receiving input of an onset time of a symptom as patient history information, the ranking unit 13 receives input of the onset time for each symptom input information. Specifically, when receiving an instruction (pressing of an icon) to display a screen for inputting an onset time of a symptom, the display processing unit 17 performs display processing of a screen for inputting an appearance date and a disappearance date as the onset time for each symptom and/or finding input or specified as the symptom input information. Then, the ranking unit 13 receives input with the appearance date and disappearance date for each symptom and/or finding as the onset time.

[0089]

FIG. 11 is a display example of a screen displayed on

the user terminal device 3 for inputting an onset time. In the illustrated example, an input onset time is displayed for each symptom and/or finding input or specified as symptom input information, and an onset time can be input by pressing an "edit" button or "input from calendar".

[0090]

Note that, in a case where the input of the onset time is not received, the ranking unit 13 specifies the onset time on the basis of time information (date information) when the search processing for disease candidates is performed.

[0091]

As described above, when information is input in S1 and S2 and a "search" button on the search result screen is pressed, the following processing is executed. Note that the following processing may be executed every time information is input in S1 and S2.

[0092]

<3.3. Specification of disease candidates>

In S3, the disease candidate specifying unit 12 specifies a disease candidate. In the present embodiment, the disease candidate specifying unit 12 specifies a disease candidate on the basis of the symptom input information and the disease characteristic information. Further, the disease candidate specifying unit 12 specifies a disease candidate that a patient suffers from on the basis of the symptom input information, the symptom finding

unifying master, and the disease characteristic information.

[0093]

Specifically, the disease candidate specifying unit 12 specifies the symptom input information specified in S1 as the symptom finding information. Further, the disease candidate specifying unit 12 specifies symptom finding information corresponding to the symptom input information on the basis of the symptom input information input by the user and the symptom finding unifying master. Then, the disease candidate specifying unit 12 specifies a disease candidate corresponding to the symptom finding information on the basis of the specified symptom finding information and disease characteristic information.

[0094]

Further, the disease candidate specifying unit 12 specifies a disease candidate on the basis of disease basic information and disease characteristic information of a disease that affects a family member. In the present embodiment, the disease candidate specifying unit 12 specifies a disease genetically related to the disease affecting a family member as a disease candidate on the basis of the disease basic information of the disease affecting the family member and the heritability information of the disease characteristic information.

[0095]

Further, in a preferred mode of the present invention

of the present invention, in a case where information related to symptoms and/or findings developed by coexistence of a plurality of diseases is input, a combination of disease candidates can be specified. Specifically, the database 2 stores a combination of disease candidates including two or more diseases in association with symptom finding information, and the disease candidate specifying unit 12 specifies a combination of disease candidates together with a single disease candidate when receiving input of symptom input information.

[0096]

In addition, in a preferred embodiment, the disease candidate specifying unit 12 may specify a disease candidate on the basis of the input timeline of the onset time of each symptom. Specifically, a symptom onset pattern and disease symptom pattern information associated with a disease are registered, and the disease candidate specifying unit 12 specifies a disease candidate on the basis of the input onset time and disease symptom pattern information.

[0097]

<3.4. Ranking of disease candidates>

In S4, the ranking unit 13 ranks the disease candidates that the patient suffers from. In the present embodiment, the ranking unit 13 ranks the disease candidates specified in S3 on the basis of the patient

history information, the onset risk unifying master, and the disease relationship information. Further, the ranking unit 13 ranks the disease candidates on the basis of the patient history information and the disease relationship information.

[0098]

Specifically, the ranking unit 13 specifies the onset risk information corresponding to the patient history information on the basis of the input patient history information and the onset risk unifying master. Further, the ranking unit 13 specifies the patient history information specified in S2 as the onset risk information. The ranking unit 13 specifies a relationship index corresponding to a combination of a disease and onset risk information on the basis of the specified onset risk information and the disease relationship information. Then, the ranking unit 13 calculates a relationship integration value obtained by accumulating (exponentiating or incrementing) the specified relationship index for each disease, and ranks the disease candidates on the basis of the relationship integration value. For example, the ranking unit 13 ranks the disease candidates higher in descending order of the relationship integration value.

[0099]

Further, the ranking unit 13 ranks the disease candidates on the basis of an area of residence, age, and gender of a patient and/or an onset time of a symptom in

the input patient history information. Specifically, the ranking unit 13 specifies the morbidity for each disease on the basis of the age-specific morbidity, the region-specific morbidity, the gender-specific morbidity, and the period-specific morbidity of the disease characteristic information stored in the database 2, and the area of residence, age, gender, and/or the onset time of the symptom input as the patient history information. Then, the ranking unit 13 ranks the disease candidates using the morbidity in addition to the relationship integration value. For example, the ranking unit 13 ranks the disease candidates higher in descending order of the value obtained by multiplying the morbidity by the relationship integration value.

[0100]

In a preferred mode of the present invention, the ranking unit 13 ranks the disease candidates on the basis of the onset time of the input patient history information and the area of residence of the patient. Specifically, the database 2 stores morbidity by weather (combination of weather and morbidity for each disease), and the ranking unit 13 acquires weather information from the database 2 or an external database on the basis of the input onset time of the symptom and the area of residence, and specifies the morbidity for each disease on the basis of the weather information and the morbidity by weather. For example, heat stroke correlated with temperature and humidity,

bronchial asthma and cough asthma correlated with atmospheric pressure variation, and the like exist. The ranking unit 13 ranks the disease candidates higher in descending order of the value obtained by multiplying the relationship integration value by the specified morbidity.

[0101]

<3.5. Display processing of disease candidate>

In S5, the display processing unit performs display processing of the specified disease candidate. In the present embodiment, the display processing unit 17 performs display processing of the disease candidate specified in S3 on the basis of the ranking determined in S4, and causes the user terminal device 3 to display a display processing result. For example, the display processing unit 17 displays the order of each specified disease candidate. Further, the disease candidates are displayed in the upper part of the screen in descending order of ranking. Note that the display processing unit 17 may display the relationship integration value together with the order.

[0102]

Further, the display processing unit 17 performs display processing of a disease associated with the specified disease candidate. Specifically, the display processing unit 17 specifies a first lower disease associated with the disease candidate on the basis of the disease-related information and the specified disease candidate, and performs display processing of the first

lower disease. In addition, in a case where a second lower disease associated with the specified lower disease is stored, the display processing unit 17 performs display processing of the second lower disease. Then, the display processing unit 17 specifies all the lower diseases associated with the specified disease candidate and performs display processing.

[0103]

FIG. 12 is a display example of a screen displaying the specified disease candidate and the lower disease associated with the disease candidate. In the illustrated example, a plurality of first lower diseases associated with "myocardial ischemia" specified as disease candidates is displayed, a plurality of second lower diseases associated with "severe anemia" among the first lower diseases is displayed, and a plurality of third lower diseases associated with "chronic bleeding" among the second lower diseases is displayed. Further, the lower right icon of the display section W2 is pressed to further display the lower disease on the same screen. In addition, by accepting the designation of the displayed disease, the disease basic information and the disease characteristic information of the disease are displayed.

[0104]

Further, in the present embodiment, the display processing unit 17 classifies the specified disease and performs display processing. Specifically, the display

processing unit 17 classifies the lower diseases associated with the specified disease candidate on the basis of the category of the disease basic information and performs display processing thereon. For example, in a case where the specified disease is "acute liver injury", "liver abscess" is displayed as the first lower disease classified as "bacterial infection", and "bacterial liver abscess" is displayed as the second lower disease. Further, "choledocholithiasis" and "cholangiocarcinoma" are displayed as the first lower diseases classified into "biliary tract obstruction".

[0105]

Further, in a case where the combination of the disease candidates is specified in S3, the display processing unit 17 performs display processing of the combination of the disease candidates for each number of disease candidates constituting the combination of the disease candidates.

[0106]

<3.6. Display processing of test information>

In S6, the display processing unit 17 performs display processing of the test information. In the present embodiment, the test specifying unit 15 specifies the test information corresponding to the disease candidate on the basis of the disease candidate specified in S3 and the related test information. Then, the display processing unit 17 performs display processing of the test information

and displays a display processing result on the user terminal device 3.

[0107]

FIG. 13 is a display example of a screen displaying the test information. In the illustrated example, test names for specifying each disease are displayed for each of "Tsutsugamushi disease", "red spot fever in Japan", "cat scratch disease", and "malignant disease" specified as disease candidates.

[0108]

<3.7. Issuance of code>

In S7, the code issuing unit 16 issues a code of the disease candidate and the related test information. In the present embodiment, the code issuing unit 16 issues a QR code (registered trademark) for each disease candidate and test information as a code. Then, the code issuing unit 16 outputs a paper medium to which the QR code is attached.

[0109]

As described above, by executing the processing of S1 to S7, the disease candidates are specified, the specified disease candidates are ranked, and the user can easily grasp the disease affected by the patient. Further, based on the conclusion that the onset mechanism of diseases "arises from the living environment, action, and genetic factors of people", in order to accurately differentiate diseases, not only symptoms and findings but also information on what they do and eat in what environment,

what drugs they usually use, what their family's physical condition is like, and what kind of work they do in their lives are important, and the present invention can achieve disease differentiation by taking such information into consideration. In addition, the present invention enables text input of the symptom input information, so that the user can perform input with a high degree of freedom. Further, the present invention can unify expressions without depending on conversion by natural language processing by storing a master that converts into a unifying expression corresponding to the input symptom input information, and can guarantee the reliability of the conversion of the expression. In addition, in the present invention, by registering such a master, the computer can unify expressions without performing natural language processing on the input text data, and processing related to the specification of the symptom finding information can be accelerated and the load can be reduced. Furthermore, the present invention can be used even by ordinary people with poor medical knowledge, and can lead to suppression of national medical expenses from a macroscopic viewpoint by reducing the economic burden, time burden, and physical burden of the patient.

[0110]

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and

"comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

[0111]

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement or any form of suggestion that the prior art forms part of the common general knowledge in Australia.

Reference Signs List

[0112]

0	differential disease search system
1	differential disease search device
2	database
3	user terminal device
9	terminal device
91	processing unit
92	storage unit
93	communication unit
94	input unit
95	output unit
10	server
101	processing unit
102	storage unit
103	communication unit
11	registration unit

12 disease candidate specifying unit

13 ranking unit

14 symptom specifying unit

15 test specifying unit

16 code issuing unit

17 display processing unit

W disease search screen

W1 input section

W1a symptom finding input section

W1b history input section

W2 display unit

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CLAIMS

What is claimed is:

[Claim 1]

A differential disease search system for searching for a disease,

the differential disease search system comprising: a database; a disease candidate specifying unit; and a ranking unit, wherein

the database stores disease characteristic information and disease relationship information indicating a degree of relationship between a disease and a history of a patient,

the disease characteristic information is information in which disease information related to a disease is associated with symptom finding information related to a symptom and/or a finding that is possible to occur in the disease,

the disease candidate specifying unit receives input of symptom input information regarding a patient suffering from a certain disease, the information being related to a symptom and/or a finding observed in the patient, and specifies a disease candidate on a basis of the symptom input information and the disease characteristic information, and

the ranking unit receives input of patient history

information and ranks the specified disease candidate on a basis of the patient history information and the disease relationship information.

[Claim 2]

The differential disease search system according to claim 1, wherein

the disease relationship information includes a relationship index associated with each combination of onset risk information and a disease, and

the ranking unit calculates, for each of the diseases, a relationship integration value obtained by accumulating the relationship index corresponding to the patient history information on a basis of the disease relationship information and the input patient history information, and ranks the disease candidate on a basis of the relationship integration value.

[Claim 3]

The differential disease search system according to claim 1, further comprising: a symptom specifying unit; and a display processing unit, wherein

the database stores disease characteristic information in which the symptom finding information is associated with symptom detailed information of a symptom and/or a finding,

the symptom specifying unit specifies the symptom

detailed information on a basis of the input symptom input information,

the display processing unit performs display processing of the specified symptom detailed information so as to enable designation, and

the disease candidate specifying unit specifies the symptom finding information on a basis of the designated symptom detailed information and the disease characteristic information.

[Claim 4]

The differential disease search system according to claim 3, wherein the database stores, as the symptom detailed information, one or a plurality of symptom finding images in which symptoms and/or findings are imaged, in association with the symptom finding information,

the symptom specifying unit specifies the symptom finding image on a basis of the input symptom input information,

the display processing unit performs display processing of the specified symptom finding image so as to enable designation, and

the disease candidate specifying unit specifies the symptom finding information on a basis of the designated symptom finding image and the disease characteristic information.

[Claim 5]

The differential disease search system according to claim 1, further comprising: a symptom specifying unit; and a display processing unit, wherein

the database stores disease characteristic information in which the symptom finding information and an onset site are associated,

the display processing unit performs display processing of a site designation image that enables designation of the onset site,

the symptom specifying unit receives selection input of the onset site via the site designation image and specifies the symptom finding information on a basis of the selectively input onset site and the disease characteristic information, and

the display processing unit performs display processing of the specified symptom finding information so as to enable designation.

[Claim 6]

The differential disease search system according to claim 1, further comprising a display processing unit, wherein

the database stores disease-related information,

the disease-related information has a hierarchical structure in which a certain disease is an upper disease and a disease causing the upper disease is a lower disease,

and

the display processing unit performs display processing of the specified disease candidate and the lower disease of the disease candidate in association with each other.

[Claim 7]

The differential disease search system according to claim 1, further comprising a display processing unit, wherein

the database stores onset risk information in which position information is associated with an onset cause candidate, and

the display processing unit performs display processing of the onset cause candidate so as to enable designation as the patient history information on a basis of past position information of a user and the onset risk information.

[Claim 8]

The differential disease search system according to claim 1, wherein

the database stores a combination of an area of residence, age, and gender of a patient and/or an onset time of a symptom and a morbidity for each disease, and

the ranking unit receives input of the area of residence, age, and gender of the patient and/or the onset

time of the symptom as the patient history information, and ranks the disease candidate using the morbidity for each disease based on the area of residence, age, and gender of the patient and/or the onset time of the symptom.

[Claim 9]

A differential disease search program for searching for a disease, the differential disease search program causing a computer to function as: a database; a disease candidate specifying unit; and a ranking unit, wherein

the database stores disease characteristic information and disease relationship information indicating a degree of relationship between a disease and a history of a patient,

the disease characteristic information is information in which disease information related to a disease is associated with symptom finding information related to a symptom and/or a finding that is possible to occur in the disease,

the disease candidate specifying unit receives input of symptom input information regarding a patient suffering from a certain disease, the information being related to a symptom and/or a finding observed in the patient, and specifies a disease candidate on a basis of the symptom input information and the disease characteristic information, and

the ranking unit receives input of patient history

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information and ranks the specified disease candidate on a basis of the patient history information and the disease relationship information.

[Claim 10]

A differential disease search method for searching for a disease, the method comprising:

by a computer:

processing of storing disease characteristic information and disease relationship information indicating a degree of relationship between a disease and a history of a patient;

processing of receiving input of symptom input information regarding a patient suffering from a certain disease, the information being related to a symptom and/or a finding observed in the patient, and specifying a disease candidate on a basis of the symptom input information and the disease characteristic information; and

processing of receiving input of patient history information and ranking the specified disease candidate on a basis of the patient history information and the disease relationship information, wherein

the disease characteristic information is information associating disease information related to a disease and symptom finding information related to a symptom and/or a finding that is possible to occur in the disease.

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FIG. 1

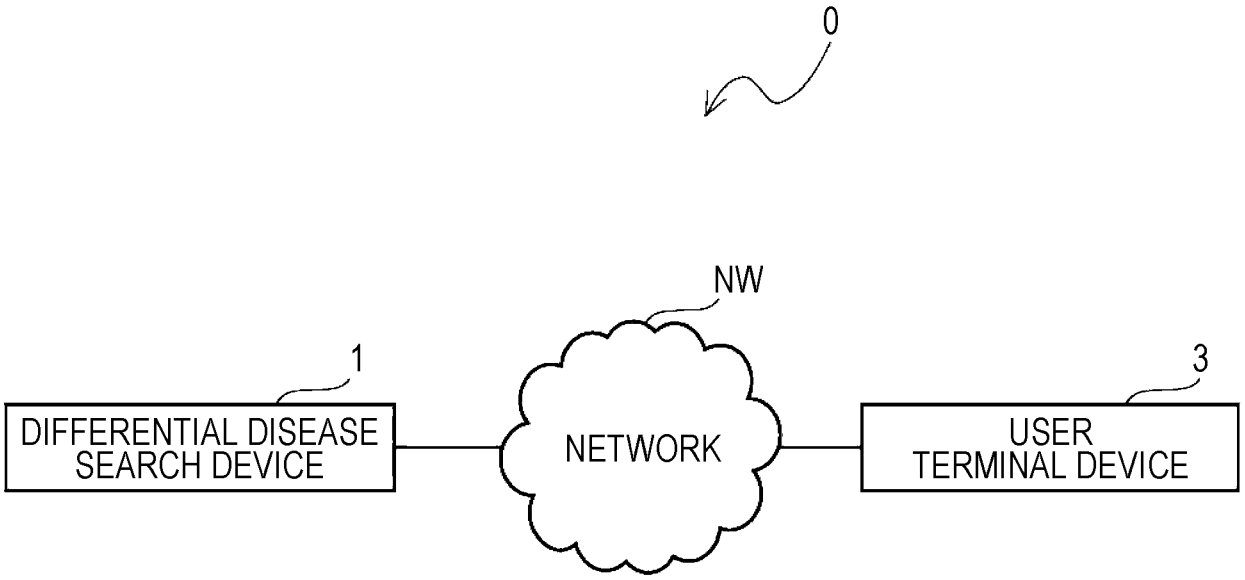

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FIG. 2A

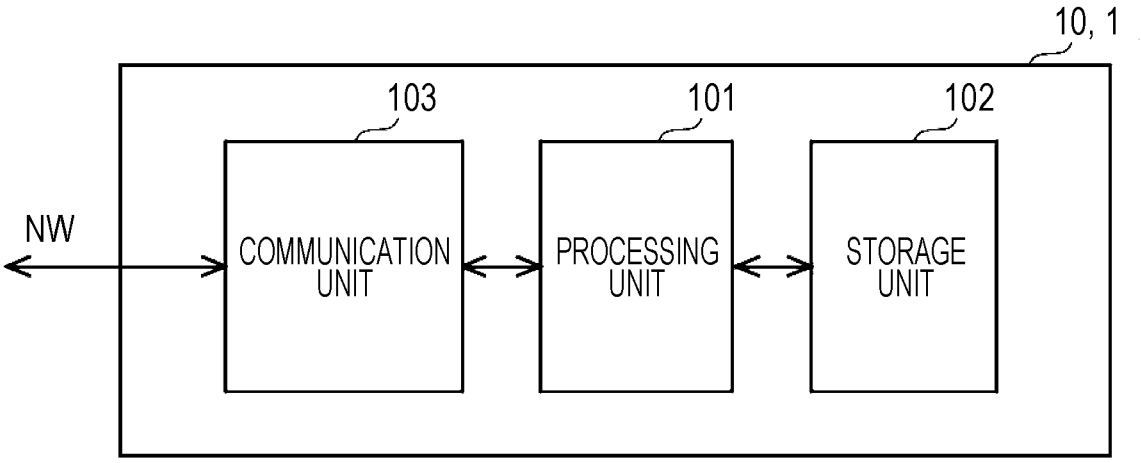

FIG. 2B

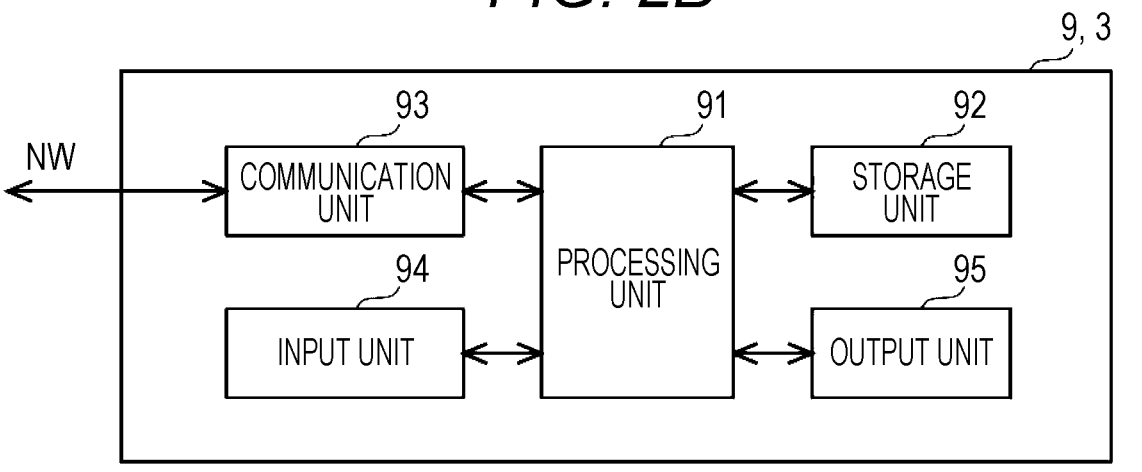

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FIG. 3

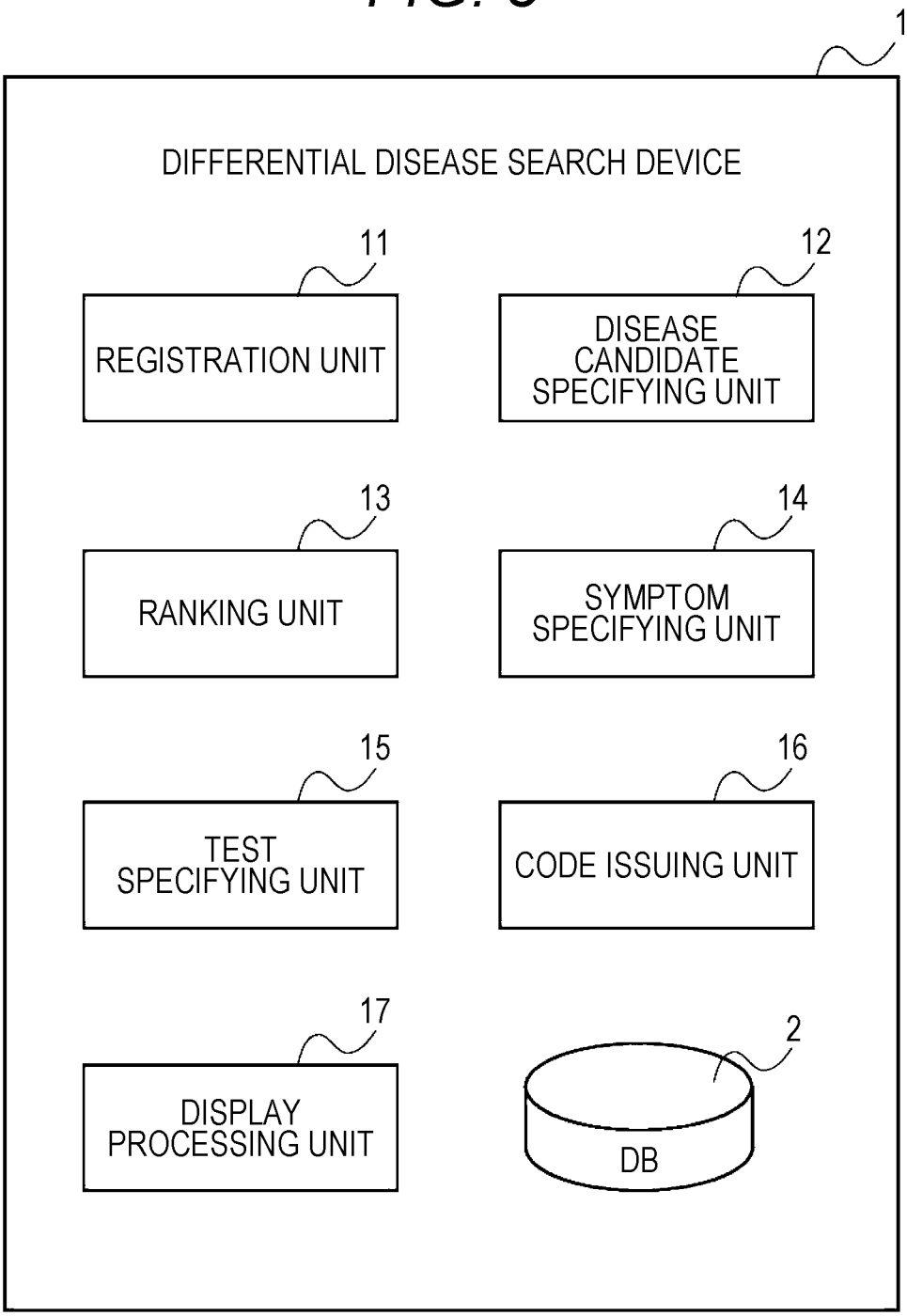

FIG. 4

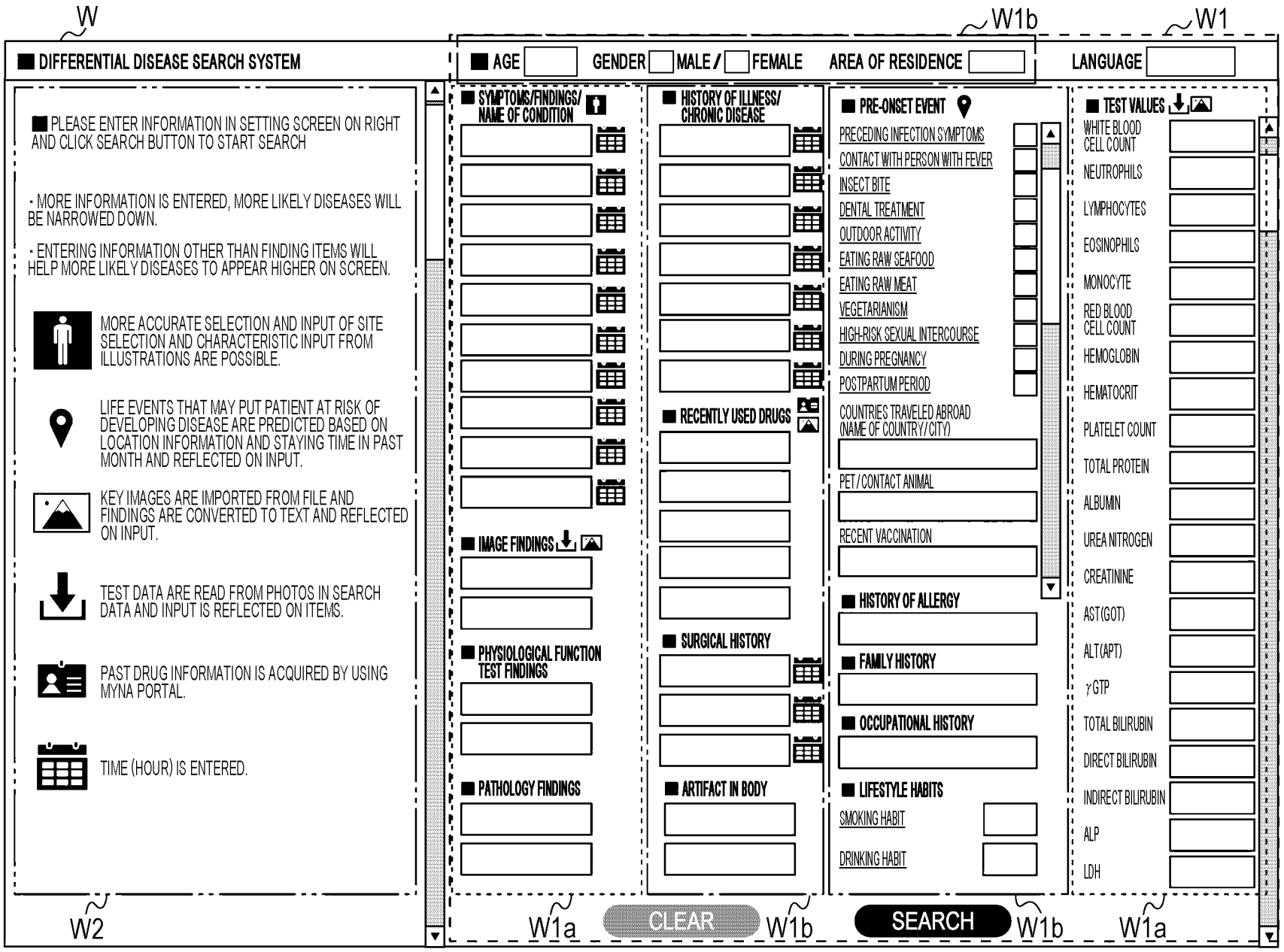
W
W1b
W1
DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
PLEASE ENTER INFORMATION IN SETTING SCREEN ON RIGHT AND CLICK SEARCH BUTTON TO START SEARCH
• MORE INFORMATION IS ENTERED, MORE LIKELY DISEASES WILL BE NARROWED DOWN.
• ENTERING INFORMATION OTHER THAN FINDING ITEMS WILL HELP MORE LIKELY DISEASES TO APPEAR HIGHER ON SCREEN.
MORE ACCURATE SELECTION AND INPUT OF SITE SELECTION AND CHARACTERISTIC INPUT FROM ILLUSTRATIONS ARE POSSIBLE.
LIFE EVENTS THAT MAY PUT PATIENT AT RISK OF DEVELOPING DISEASE ARE PREDICTED BASED ON LOCATION INFORMATION AND STAYING TIME IN PAST MONTH AND REFLECTED ON INPUT.
KEY IMAGES ARE IMPORTED FROM FILE AND FINDINGS ARE CONVERTED TO TEXT AND REFLECTED ON INPUT.
TEST DATA ARE READ FROM PHOTOS IN SEARCH DATA AND INPUT IS REFLECTED ON ITEMS.
PAST DRUG INFORMATION IS ACQUIRED BY USING MYNA PORTAL.
TIME (HOUR) IS ENTERED.
SYMPTOMS/FINDINGS/ NAME OF CONDITION
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
W2
W1a
CLEAR
W1b
SEARCH
W1b
W1a

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FIG. 5

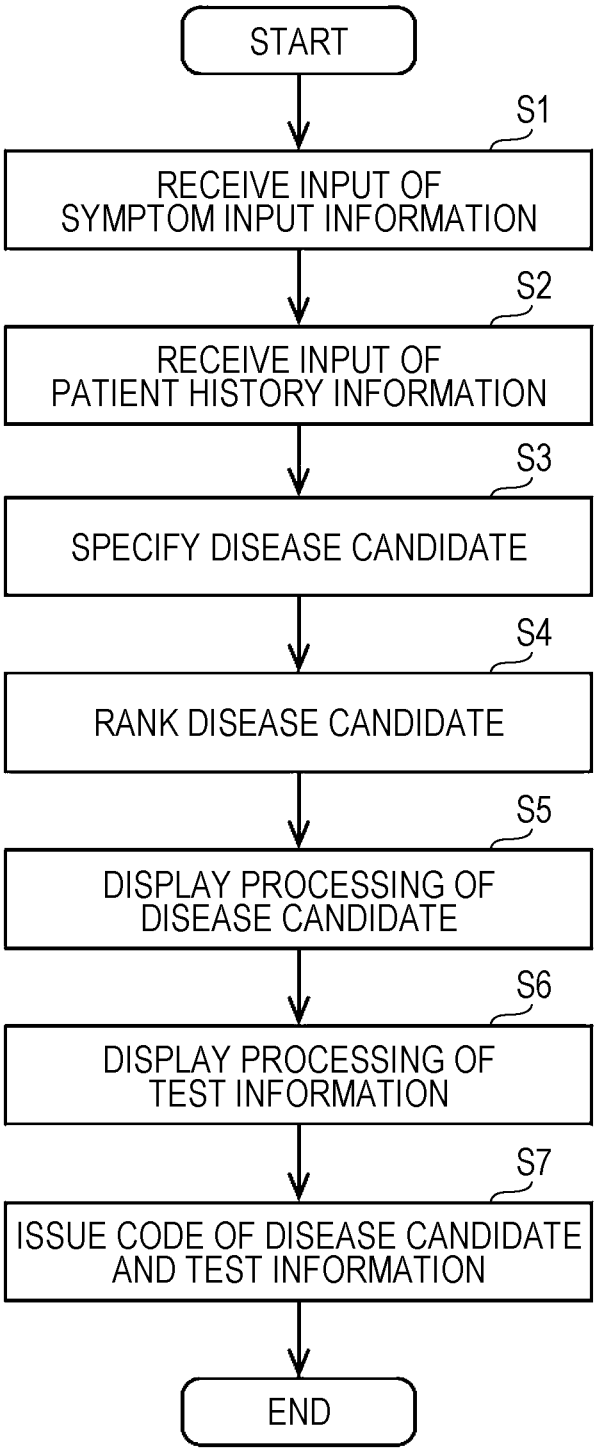


FIG. 6

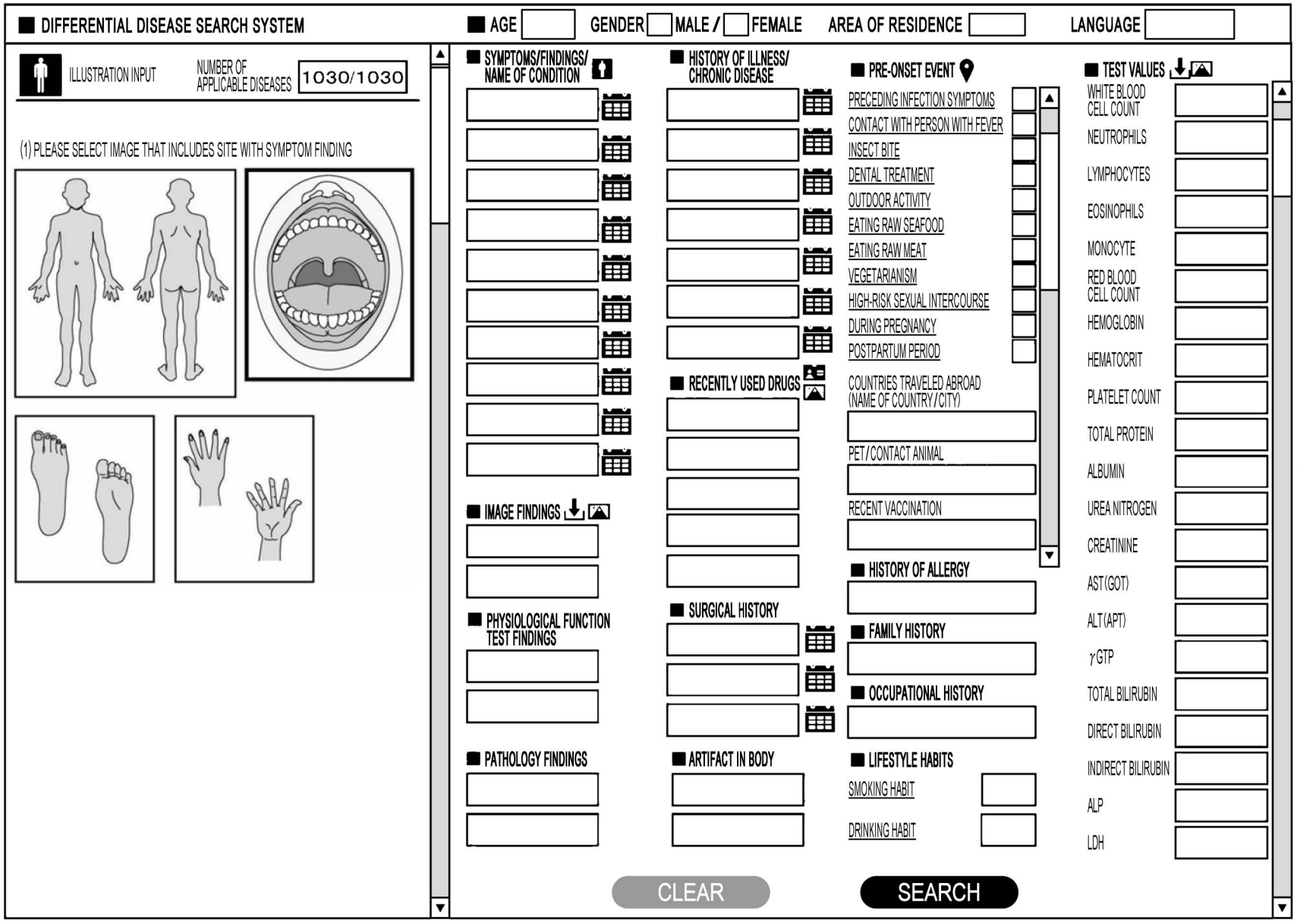

DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
ILLUSTRATION INPUT
NUMBER OF APPLICABLE DISEASES
1030/1030
(1) PLEASE SELECT IMAGE THAT INCLUDES SITE WITH SYMPTOM FINDING
SYMPTOMS/FINDINGS/ NAME OF CONDITION
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 7

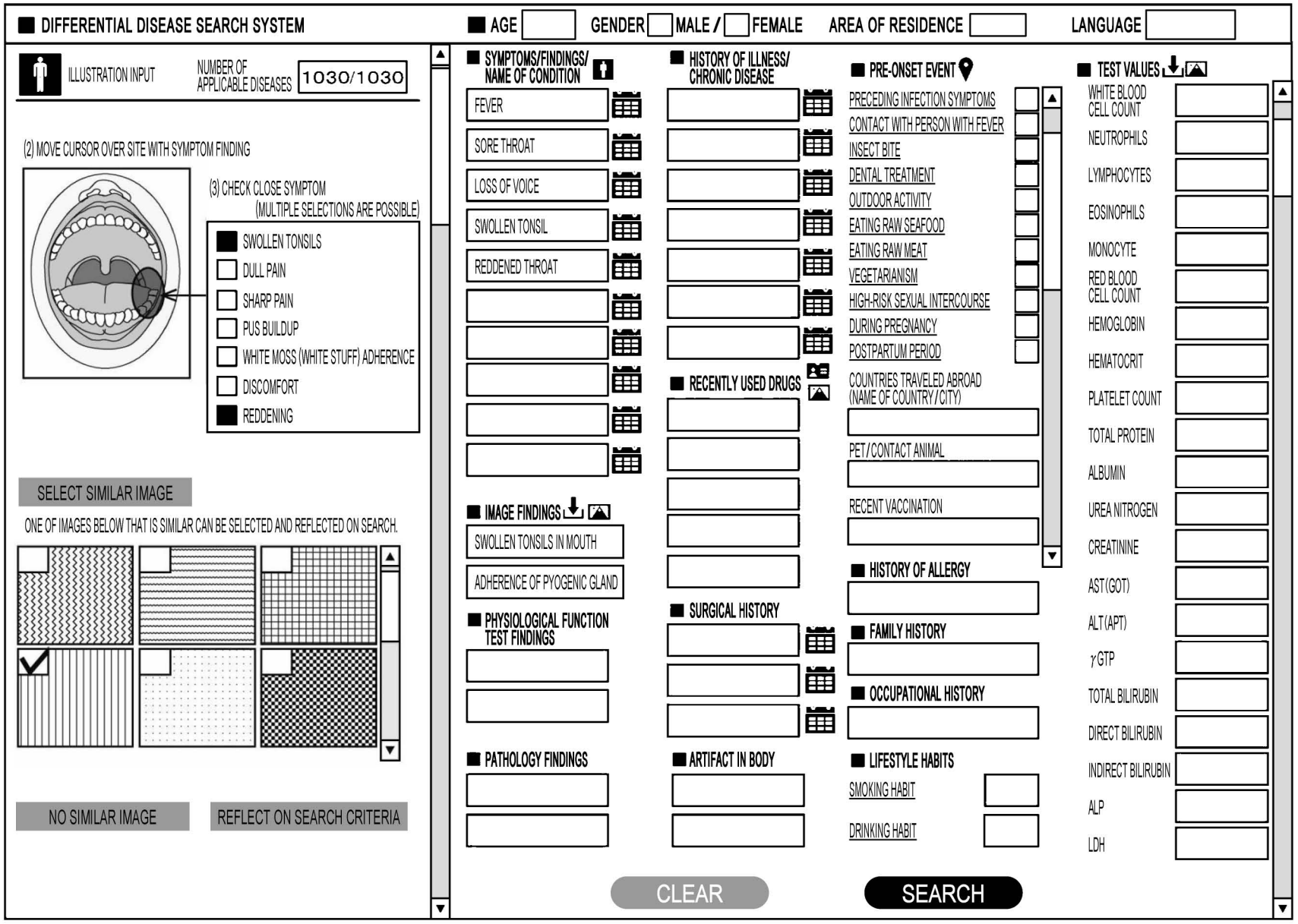

DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
ILLUSTRATION INPUT
NUMBER OF APPLICABLE DISEASES
1030/1030
(2) MOVE CURSOR OVER SITE WITH SYMPTOM FINDING
(3) CHECK CLOSE SYMPTOM (MULTIPLE SELECTIONS ARE POSSIBLE)
SWOLLEN TONSILS
DULL PAIN
SHARP PAIN
PUS BUILDUP
WHITE MOSS (WHITE STUFF) ADHERENCE
DISCOMFORT
REDDENING
SELECT SIMILAR IMAGE
ONE OF IMAGES BELOW THAT IS SIMILAR CAN BE SELECTED AND REFLECTED ON SEARCH.
NO SIMILAR IMAGE
REFLECT ON SEARCH CRITERIA
SYMPTOMS/FINDINGS/ NAME OF CONDITION
FEVER
SORE THROAT
LOSS OF VOICE
SWOLLEN TONSIL
REDDENED THROAT
IMAGE FINDINGS
SWOLLEN TONSILS IN MOUTH
ADHERENCE OF PYOGENIC GLAND
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY / CITY)
PET / CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST (GOT)
ALT (APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 8

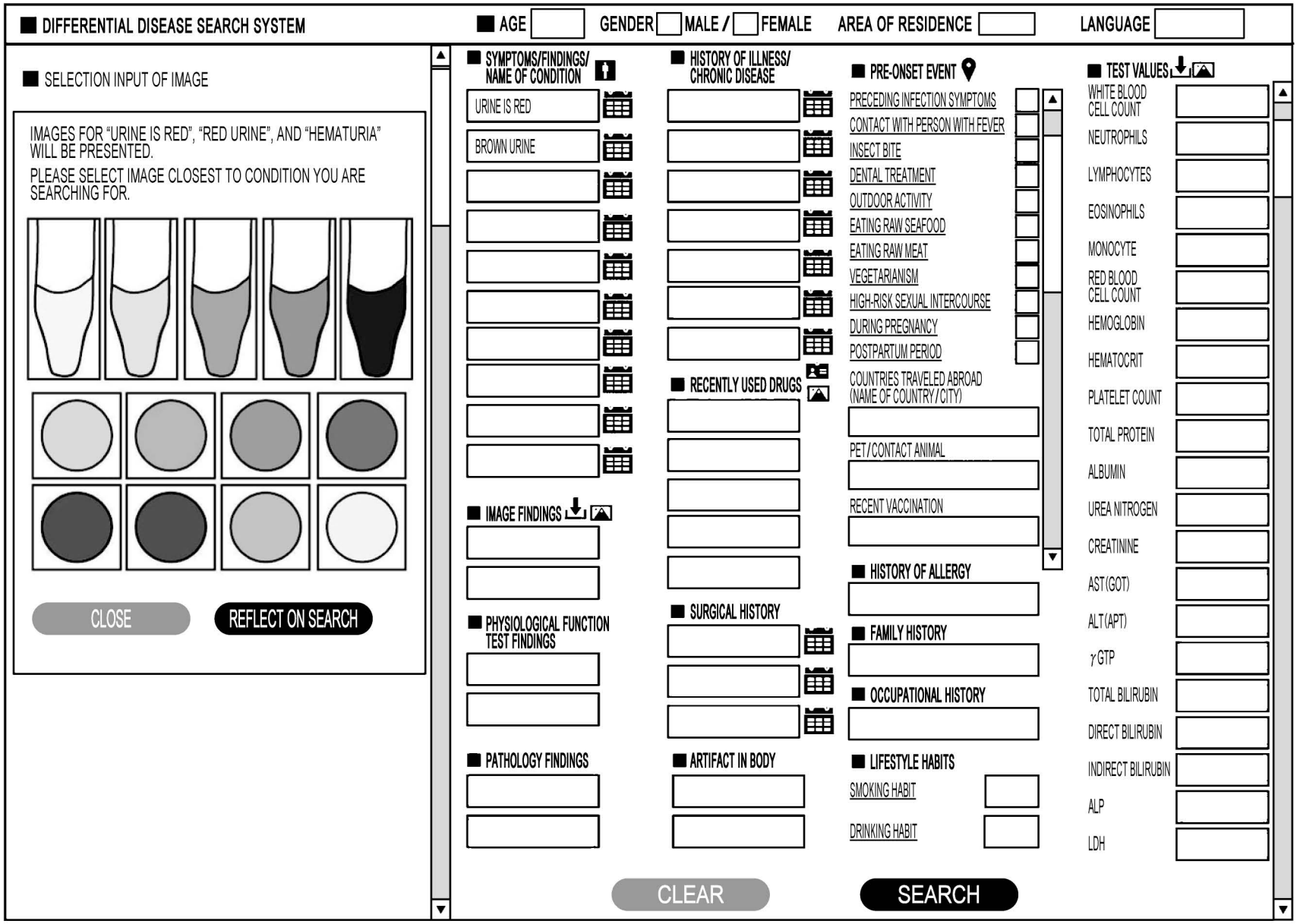

DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
SELECTION INPUT OF IMAGE
IMAGES FOR "URINE IS RED", "RED URINE", AND "HEMATURIA" WILL BE PRESENTED.
PLEASE SELECT IMAGE CLOSEST TO CONDITION YOU ARE SEARCHING FOR.
CLOSE
REFLECT ON SEARCH
SYMPTOMS/FINDINGS/ NAME OF CONDITION
URINE IS RED
BROWN URINE
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY / CITY)
PET / CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST (GOT)
ALT (APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 9

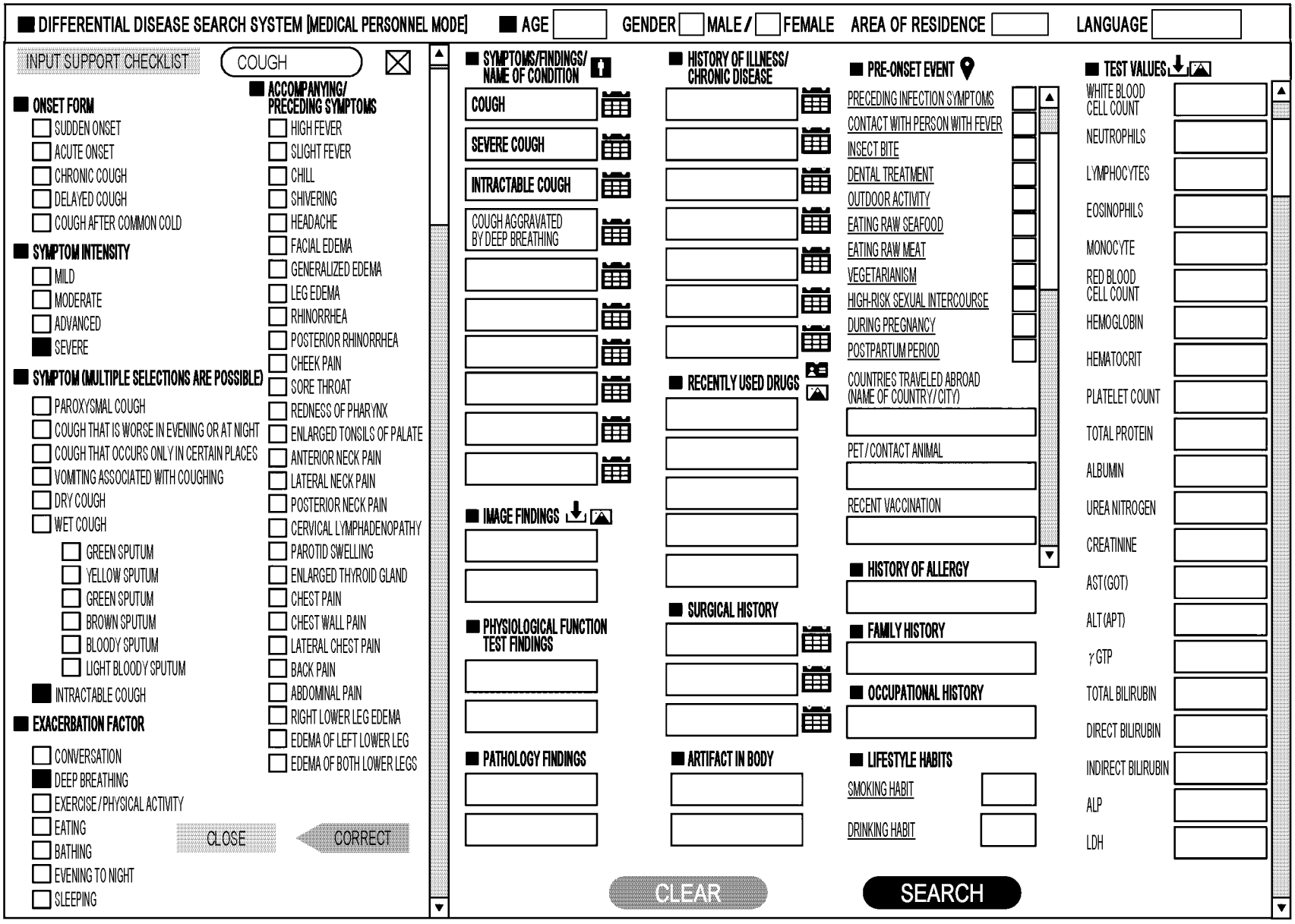

DIFFERENTIAL DISEASE SEARCH SYSTEM [MEDICAL PERSONNEL MODE]
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
INPUT SUPPORT CHECKLIST
COUGH
ONSET FORM
SUDDEN ONSET
ACUTE ONSET
CHRONIC COUGH
DELAYED COUGH
COUGH AFTER COMMON COLD
SYMPTOM INTENSITY
MILD
MODERATE
ADVANCED
SEVERE
SYMPTOM (MULTIPLE SELECTIONS ARE POSSIBLE)
PAROXYSMAL COUGH
COUGH THAT IS WORSE IN EVENING OR AT NIGHT
COUGH THAT OCCURS ONLY IN CERTAIN PLACES
VOMITING ASSOCIATED WITH COUGHING
DRY COUGH
WET COUGH
GREEN SPUTUM
YELLOW SPUTUM
GREEN SPUTUM
BROWN SPUTUM
BLOODY SPUTUM
LIGHT BLOODY SPUTUM
INTRACTABLE COUGH
EXACERBATION FACTOR
CONVERSATION
DEEP BREATHING
EXERCISE/PHYSICAL ACTIVITY
EATING
BATHING
EVENING TO NIGHT
SLEEPING
ACCOMPANYING/ PRECEDING SYMPTOMS
HIGH FEVER
SLIGHT FEVER
CHILL
SHIVERING
HEADACHE
FACIAL EDEMA
GENERALIZED EDEMA
LEG EDEMA
RHINORRHEA
POSTERIOR RHINORRHEA
CHEEK PAIN
SORE THROAT
REDNESS OF PHARYNX
ENLARGED TONSILS OF PALATE
ANTERIOR NECK PAIN
LATERAL NECK PAIN
POSTERIOR NECK PAIN
CERVICAL LYMPHADENOPATHY
PAROTID SWELLING
ENLARGED THYROID GLAND
CHEST PAIN
CHEST WALL PAIN
LATERAL CHEST PAIN
BACK PAIN
ABDOMINAL PAIN
RIGHT LOWER LEG EDEMA
EDEMA OF LEFT LOWER LEG
EDEMA OF BOTH LOWER LEGS
CLOSE
CORRECT
SYMPTOMS/FINDINGS/ NAME OF CONDITION
COUGH
SEVERE COUGH
INTRACTABLE COUGH
COUGH AGGRAVATED BY DEEP BREATHING
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 10

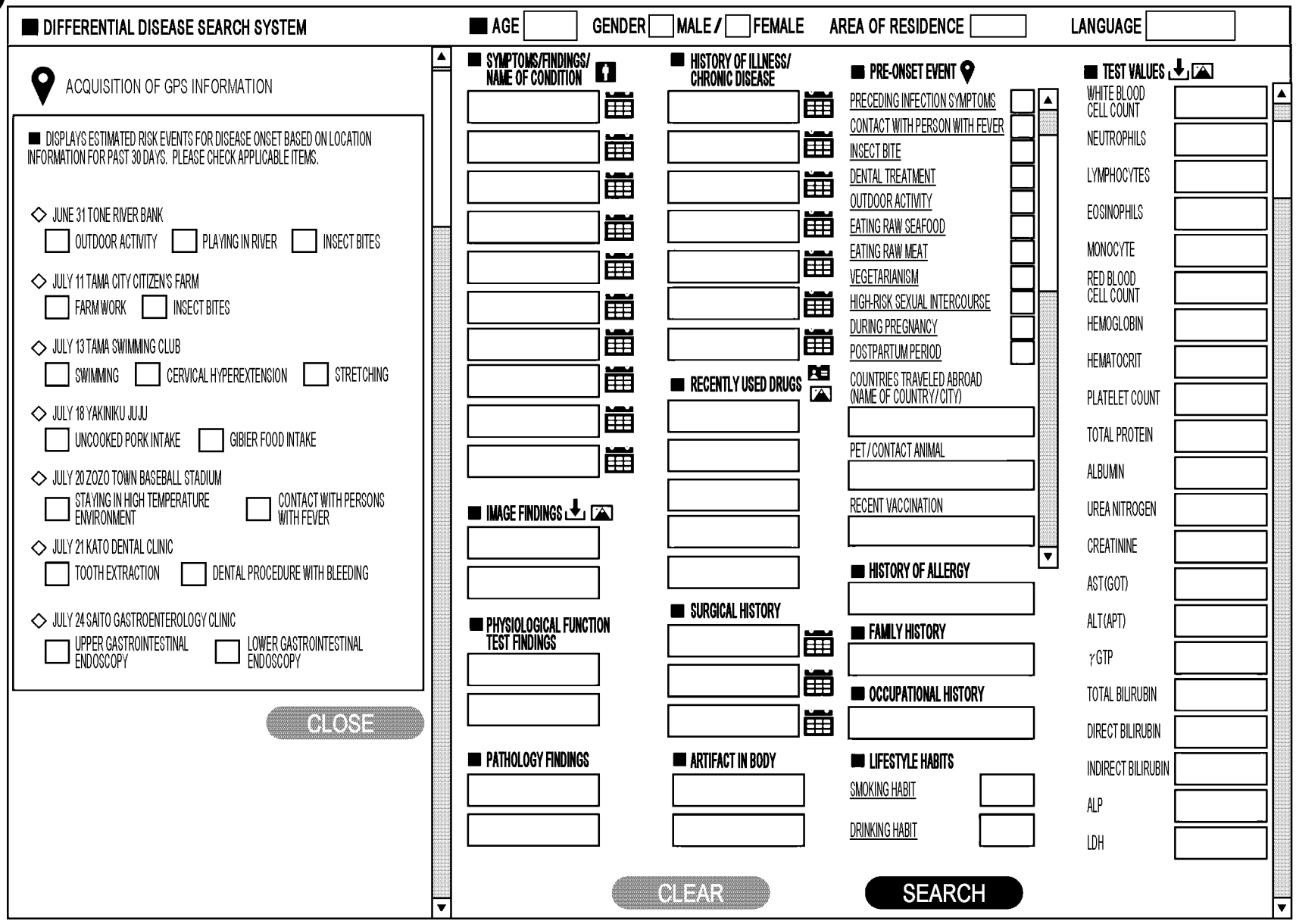

DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
ACQUISITION OF GPS INFORMATION
DISPLAYS ESTIMATED RISK EVENTS FOR DISEASE ONSET BASED ON LOCATION INFORMATION FOR PAST 30 DAYS. PLEASE CHECK APPLICABLE ITEMS.
JUNE 31 TONE RIVER BANK
OUTDOOR ACTIVITY
PLAYING IN RIVER
INSECT BITES
JULY 11 TAMA CITY CITIZEN'S FARM
FARM WORK
INSECT BITES
JULY 13 TAMA SWIMMING CLUB
SWIMMING
CERVICAL HYPEREXTENSION
STRETCHING
JULY 18 YAKINIKU JUJU
UNCOOKED PORK INTAKE
GIBIER FOOD INTAKE
JULY 20 ZOZO TOWN BASEBALL STADIUM
STAYING IN HIGH TEMPERATURE ENVIRONMENT
CONTACT WITH PERSONS WITH FEVER
JULY 21 KATO DENTAL CLINIC
TOOTH EXTRACTION
DENTAL PROCEDURE WITH BLEEDING
JULY 24 SAITO GASTROENTEROLOGY CLINIC
UPPER GASTROINTESTINAL ENDOSCOPY
LOWER GASTROINTESTINAL ENDOSCOPY
CLOSE
SYMPTOMS/FINDINGS/ NAME OF CONDITION
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 11

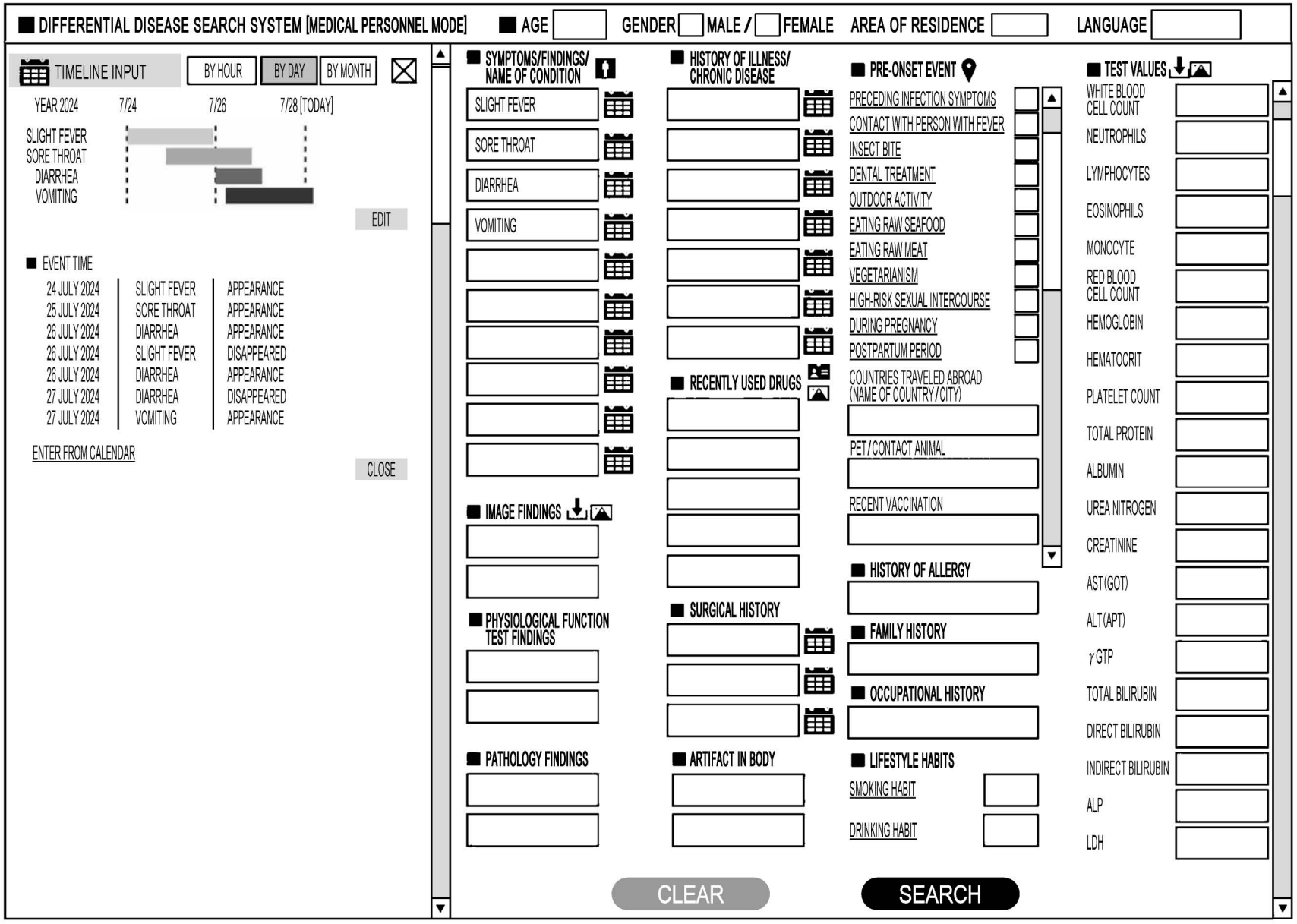

DIFFERENTIAL DISEASE SEARCH SYSTEM [MEDICAL PERSONNEL MODE]
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
TIMELINE INPUT
BY HOUR
BY DAY
BY MONTH
YEAR 2024
7/24
7/26
7/28 [TODAY]
SLIGHT FEVER
SORE THROAT
DIARRHEA
VOMITING
EDIT
EVENT TIME
24 JULY 2024 SLIGHT FEVER APPEARANCE
25 JULY 2024 SORE THROAT APPEARANCE
26 JULY 2024 DIARRHEA APPEARANCE
26 JULY 2024 SLIGHT FEVER DISAPPEARED
26 JULY 2024 DIARRHEA APPEARANCE
27 JULY 2024 DIARRHEA DISAPPEARED
27 JULY 2024 VOMITING APPEARANCE
ENTER FROM CALENDAR
CLOSE
SYMPTOMS/FINDINGS/ NAME OF CONDITION
SLIGHT FEVER
SORE THROAT
DIARRHEA
VOMITING
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 12

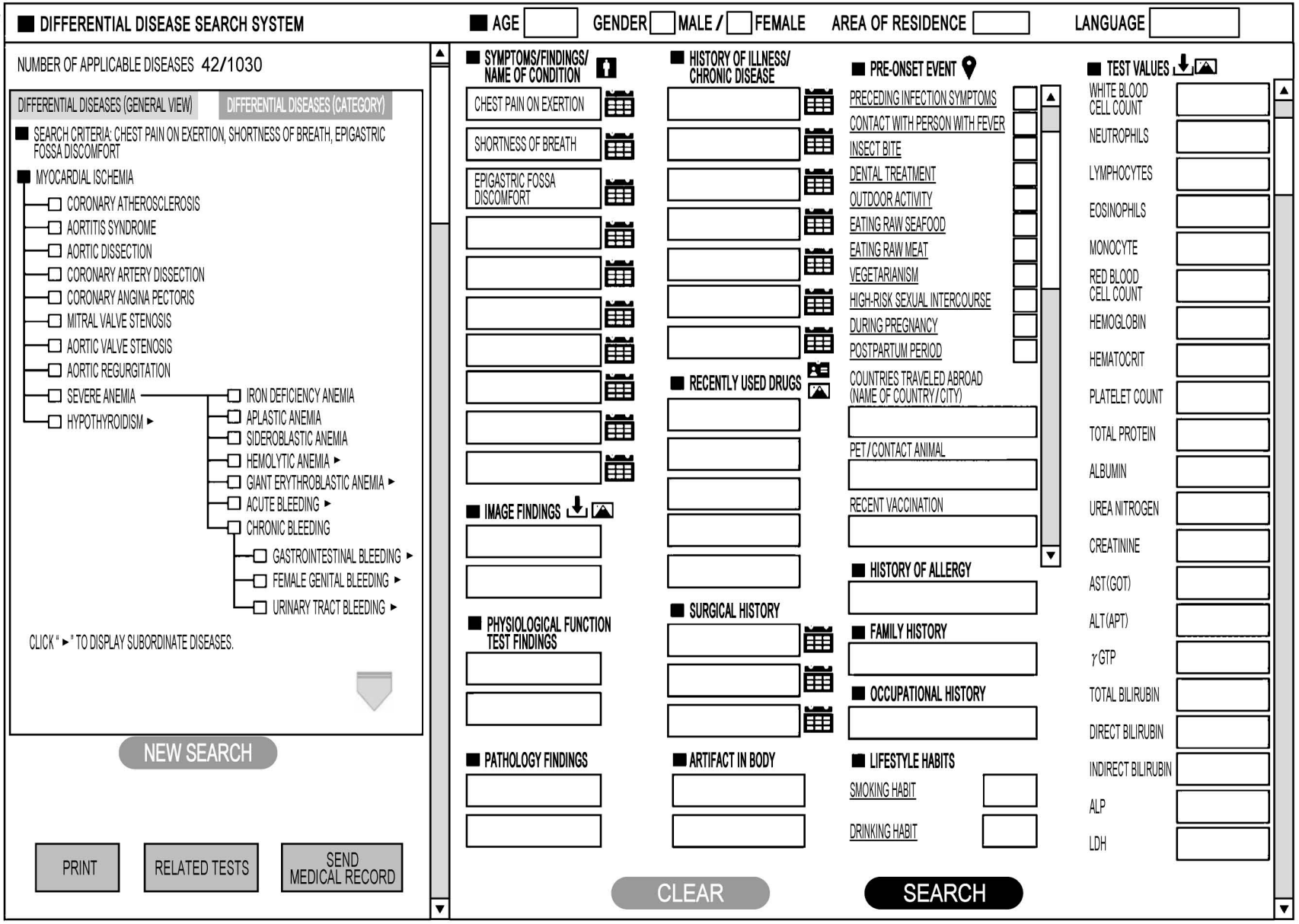
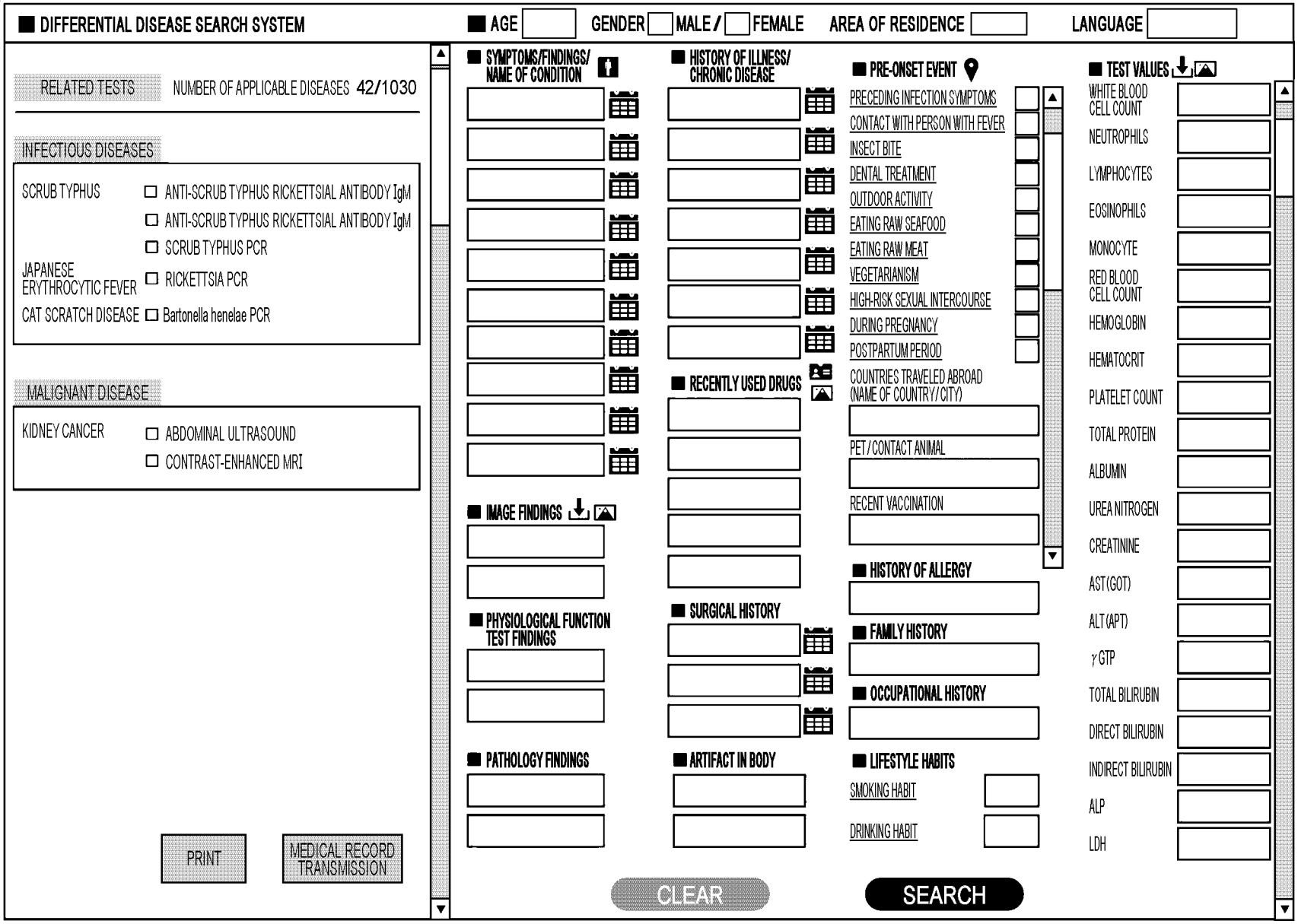

DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
NUMBER OF APPLICABLE DISEASES 42/1030
DIFFERENTIAL DISEASES (GENERAL VIEW)
DIFFERENTIAL DISEASES (CATEGORY)
SEARCH CRITERIA: CHEST PAIN ON EXERTION, SHORTNESS OF BREATH, EPIGASTRIC FOSSA DISCOMFORT
MYOCARDIAL ISCHEMIA
CORONARY ATHEROSCLEROSIS
AORTITIS SYNDROME
AORTIC DISSECTION
CORONARY ARTERY DISSECTION
CORONARY ANGINA PECTORIS
MITRAL VALVE STENOSIS
AORTIC VALVE STENOSIS
AORTIC REGURGITATION
SEVERE ANEMIA
IRON DEFICIENCY ANEMIA
APLASTIC ANEMIA
SIDEROBLASTIC ANEMIA
HEMOLYTIC ANEMIA ►
GIANT ERYTHROBLASTIC ANEMIA ►
HYPOTHYROIDISM ►
ACUTE BLEEDING ►
CHRONIC BLEEDING
GASTROINTESTINAL BLEEDING ►
FEMALE GENITAL BLEEDING ►
URINARY TRACT BLEEDING ►
CLICK "►" TO DISPLAY SUBORDINATE DISEASES.
NEW SEARCH
PRINT
RELATED TESTS
SEND MEDICAL RECORD
SYMPTOMS/FINDINGS/ NAME OF CONDITION
CHEST PAIN ON EXERTION
SHORTNESS OF BREATH
EPIGASTRIC FOSSA DISCOMFORT
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

FIG. 13


DIFFERENTIAL DISEASE SEARCH SYSTEM
AGE
GENDER MALE / FEMALE
AREA OF RESIDENCE
LANGUAGE
RELATED TESTS
NUMBER OF APPLICABLE DISEASES 42/1030
INFECTIOUS DISEASES
SCRUB TYPHUS
ANTI-SCRUB TYPHUS RICKETTSIAL ANTIBODY IgM
ANTI-SCRUB TYPHUS RICKETTSIAL ANTIBODY IgM
SCRUB TYPHUS PCR
JAPANESE ERYTHROCYTIC FEVER
RICKETTSIA PCR
CAT SCRATCH DISEASE
Bartonella henelae PCR
MALIGNANT DISEASE
KIDNEY CANCER
ABDOMINAL ULTRASOUND
CONTRAST-ENHANCED MRI
PRINT
MEDICAL RECORD TRANSMISSION
SYMPTOMS/FINDINGS/ NAME OF CONDITION
IMAGE FINDINGS
PHYSIOLOGICAL FUNCTION TEST FINDINGS
PATHOLOGY FINDINGS
HISTORY OF ILLNESS/ CHRONIC DISEASE
RECENTLY USED DRUGS
SURGICAL HISTORY
ARTIFACT IN BODY
PRE-ONSET EVENT
PRECEDING INFECTION SYMPTOMS
CONTACT WITH PERSON WITH FEVER
INSECT BITE
DENTAL TREATMENT
OUTDOOR ACTIVITY
EATING RAW SEAFOOD
EATING RAW MEAT
VEGETARIANISM
HIGH-RISK SEXUAL INTERCOURSE
DURING PREGNANCY
POSTPARTUM PERIOD
COUNTRIES TRAVELED ABROAD (NAME OF COUNTRY/CITY)
PET/CONTACT ANIMAL
RECENT VACCINATION
HISTORY OF ALLERGY
FAMILY HISTORY
OCCUPATIONAL HISTORY
LIFESTYLE HABITS
SMOKING HABIT
DRINKING HABIT
TEST VALUES
WHITE BLOOD CELL COUNT
NEUTROPHILS
LYMPHOCYTES
EOSINOPHILS
MONOCYTE
RED BLOOD CELL COUNT
HEMOGLOBIN
HEMATOCRIT
PLATELET COUNT
TOTAL PROTEIN
ALBUMIN
UREA NITROGEN
CREATININE
AST(GOT)
ALT(APT)
γGTP
TOTAL BILIRUBIN
DIRECT BILIRUBIN
INDIRECT BILIRUBIN
ALP
LDH
CLEAR
SEARCH

13/13