

added, detecting when liquid has traveled the length of the membrane, and combinations thereof.

[0088] In addition, testing device may include or may be configured to access an interpretive algorithm stored in a computer readable format and electronically coupled to the handheld device, wherein the interpretive algorithm is configured to (i) calculate a calibration curve based on the first calibration standard and the second calibration standard and then (ii) convert the detectable signal from the first reporter to a numerical value related to the presence or amount of the at least one analyte present in a sample. The interpretive algorithm may be included in an on-board computing system of the handheld device or the interpretive algorithm may be stored remotely in a computer storage medium that is accessible by the handheld device.

[0089] In one embodiment, the interpretive algorithm queried in the above described method may include one or more computer storage media having stored thereon computer executable instructions that, when executed by one or more processors of the detector device, implement a method for interpreting the numerical value related to the presence or amount of the at least one analyte present in the sample. In one embodiment, the computer implemented method may include (1) receiving a user initiated request to convert the visual signal readout of the immunoassay apparatus to a numerical value, (2) in response to the request, an act of identifying at least one visual signal readout of the immunoassay apparatus, (3) capturing at least one digital signal from the at least one visual signal readout of the immunoassay apparatus, (4) converting the at least digital signal to at least one numerical, and (5) using the at least one numerical value to determine an amount or concentration of at least one analyte present in the sample. This numerical value can then be displayed on a screen located on the detector device and/or stored, interpreted, or sent to a database.

[0090] In one embodiment, the computer implemented method may further include at least one of: (1) communicating with an electronic medical records system via a wireless communication channel, (2) uploading the amount or concentration of the at least one analyte present in the sample to the electronic medical records system, or (3) querying a decision support algorithm, wherein the decision support algorithm uses the at least one numerical value to support a diagnosis of at least one condition in a subject and to suggest a course of treatment.

[0091] FIG. 10 schematically illustrates the decisions that may be made or actions that may be taken in an example decision support algorithm for a thyroid stimulating hormone (TSH) test. At the first branch point, if TSH is normal then no action is taken. If TSH is low, a clinician will be directed to check free thyroxine (T4). If free T4 is normal, the algorithm directs that the test should be repeated in 3-6 months; if free T4 is high or low, the algorithm directs that the patient should be referred to a specialist. If at the first branch point TSH is high, the clinician will be directed to check free T4. If free T4 is normal, the algorithm directs that the test should be repeated in 3-6 months; if free T4 is high, the patient should be referred to a specialist; and if free T4 is low, the algorithm directs that the patient should receive a treatment for hypothyroidism.

[0092] Embodiments of the present disclosure may comprise or utilize special purpose or general-purpose computing devices that include computer hardware, such as, for example, one or more processors and system memory, as

discussed in greater detail below. Embodiments within the scope of the present invention also include physical and other computer-readable and recordable type media for carrying or storing computer-executable instructions and/or data structures. Such computer-readable recordable media can be any available media that can be accessed by a general purpose or special purpose computer system. Computer-readable media that store computer-executable instructions according to the invention are recordable-type storage media or other physical computer storage media (devices) that are distinguished from mere transitory carrier waves.

[0093] Computer-readable media that carry computer-executable instructions are transmission media. Thus, by way of example, and not limitation, embodiments of the invention can comprise at least two distinctly different kinds of computer-readable recordable media: computer storage media (devices) and transmission media.

[0094] Computer storage media (devices) includes RAM, ROM, EEPROM, CD-ROM or other optical disk storage, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store desired program code means in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer and which are recorded on one or more recordable type medium (device).

[0095] A "network" is defined as one or more data links or communication channels that enable the transport of electronic data between computer systems and/or modules and/or other electronic devices. When information is transferred or provided over a network or another communications connection or channel (either hardwired, wireless, or a combination of hardwired or wireless) to a computer, the computer properly views the connection as a transmission medium. Transmissions media can include a network and/or data links which can be used to carry or desired program code means in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer. Combinations of the above should also be included within the scope of computer-readable media.

[0096] Further, upon reaching various computer system components, program code means in the form of computer-executable instructions or data structures can be transferred automatically from transmission media to computer storage media (devices) (or vice versa). For example, computer-executable instructions or data structures received over a network or data link can be buffered in RAM within a network interface module (e.g., a "NIC"), and then eventually transferred to computer system RAM and/or to less volatile computer storage media (devices) at a computer system. Thus, it should be understood that computer storage media (devices) can be included in computer system components that also (or even primarily) utilize transmission media.

[0097] Computer-executable instructions comprise, for example, instructions and data which, when executed at a processor, cause a general purpose computer, special purpose computer, or special purpose processing device to perform a certain function or group of functions. The computer executable instructions may be, for example, binaries, intermediate format instructions such as assembly language, or even source code. Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to