

CLAIMS

What is claimed is:

1. A drug monitoring tool, the tool comprising:
 - a data receiver configured to receive a pharmacokinetic (PK) profile of a patient; and
 - an interactive user interface configured to display to the patient a time-varying therapeutic plasma protein level of the patient, the time-varying therapeutic plasma protein level based on an administered dose of a clotting factor VIII and the PK profile of the patient.
2. The drug monitoring tool of claim 1 wherein the PK profile of the patient is based on a Bayesian model of PK profiles of sampled patients and based upon at least one of a bodyweight, von Willebrand factor ("vWF") level, and/or an age of the patient.
3. The drug monitoring tool of claim 1 wherein:
 - the data receiver is a camera configured to scan a quick response (QR) code storing patient information that includes at least PK profile information; and
 - the drug monitoring tool further comprising a QR code processor configured to extract and process the patient information stored within the QR code.
4. The drug monitoring tool of claim 1 wherein the data receiver is a communications interface configured to receive the PK profile from a secured server, the received PK profile being encrypted and the communications interface further configured to decrypt the encrypted PK profile.
5. The drug monitoring tool of claim 3 further comprising a QR code generator configured to generate the QR code having patient information encrypted

using AES-256 encryption with cipher block chaining (CBC) and public-key cryptography standards (PKCS) padding.

6. The drug monitoring tool of claim 5 wherein the QR code generator is located at a secured server remote from the drug monitoring tool.
7. The drug monitoring tool of claim 3 wherein the QR code includes at least one of or any combination of: patient identifying information, patient physiological data, patient dosing information, and/or PK profile information of the patient, wherein the patient dosing information includes a prophylactic dosing regimen for a particular clotting factor VIII drug.
8. The drug monitoring tool of claim 1 further comprising an activation toolkit configured to enable access to functionalities of the drug monitoring tool in response to at least of: receiving the PK profile the patient and/or receiving a log of a first prophylactic infusion.
9. The drug monitoring tool of claim 1 wherein the interactive user interface is configured to display a graphical representation of a time-varying amount of the therapeutic plasma protein within the patient at any given time, the graphical representation delineating zones associated with the time varying amount of the therapeutic plasma protein, wherein each zone is associated with a particular concentration range of the time-varying amount of the therapeutic plasma protein within the patient.
10. The drug monitoring tool of claim 9 wherein the interactive user interface includes a graphical control element configured to receive patient input corresponding to a request for the time-varying amount of the therapeutic plasma protein within the patient at a particular time; and wherein the interactive user interface is configured to display the graphical representation of the time varying amount of the therapeutic plasma protein within the patient at the particular time.

11. A drug monitoring tool, the tool comprising:
 - a data receiver configured to receive a pharmacokinetic (PK) profile of a patient; and
 - an interactive user interface configured to present to a patient a time-varying drug concentration level in the patient, the time-varying drug concentration level based on an administered dose of a subject drug and the PK profile of the patient.
12. A method for drug monitoring executed by a drug monitoring tool, the method comprising:
 - receiving a pharmacokinetic (PK) profile of a patient; and
 - enabling an interactive user interface to display to a patient a time-varying therapeutic plasma protein level of the patient, the time-varying therapeutic plasma protein level based on an administered dose of a clotting factor VIII and the PK profile of the patient.
13. The method of claim 12 wherein the PK profile of the patient is based on a Bayesian model of PK profiles of sampled patients and based upon at least one of a bodyweight, von Willebrand factor ("vWF") level, and/or an age of the patient.
14. The method of claim 12 wherein:
 - receiving the PK profile includes scanning a quick response (QR) code storing patient information that includes at least PK profile information; and
 - extracting and processing the patient information stored within the QR code.
15. The method of claim 12 further comprising receiving the PK profile from a secured server, the received PK profile being encrypted; and decrypting the encrypted PK profile.

16. The method of claim 14 further comprising generating the QR code having patient information encrypted using AES–256 encryption with cipher block chaining (CBC) and public-key cryptography standards (PKCS) padding.
17. The method of claim 14 wherein the QR code includes at least one of or any combination of: patient identifying information, patient physiological data, patient dosing information, and/or PK profile information of the patient, wherein the patient dosing information includes a prophylactic dosing regimen for a particular clotting factor VIII drug.
18. The method of claim 12 further comprising enabling patient access to functionalities of the drug monitoring tool in response to at least of: receiving the PK profile the patient and/or receiving a log of a first prophylactic infusion.
19. The method of claim 12 further comprising displaying a graphical representation of a time-varying amount of the therapeutic plasma protein within the patient at any given time, the graphical representation delineating zones associated with the time varying amount of the therapeutic plasma protein, wherein each zone is associated with a particular concentration range of the time-varying amount of the therapeutic plasma protein within the patient.
20. The method of claim 19 further comprising:
 - providing a graphical control element configured to receive patient input corresponding to a request for the time-varying amount of the therapeutic plasma protein within the patient at a particular time; and
 - displaying the graphical representation of the time varying amount of the therapeutic plasma protein within the patient at the particular time..
21. A drug monitoring system, the system comprising:

a therapeutic plasma protein dosing regimen apparatus comprising:

- a model generator configured to create a Bayesian model of pharmacokinetic (PK) profiles of sampled patients, the Bayesian model including (i) a therapeutic plasma protein clearance and (ii) a volume of distribution relationship for a therapeutic plasma protein based upon at least one of patient age or body weight, and

- a PK server configured to:

- determine an approximate PK profile of a patient based upon the Bayesian model, a half-life of the therapeutic plasma protein within the patient, and at least one of an age of the patient or a weight of the patient,

- determine the therapeutic plasma protein dosing regimen including a dosage and a therapeutic plasma protein level over a time period based upon the approximate PK profile of the patient,

- modify the therapeutic plasma protein dosing regimen in response to receiving a dosing interval for applying a dosage to the patient, and

- transmit the modified therapeutic plasma protein dosing regimen to the client device; and

a drug monitoring tool comprising:

- a data receiver configured to receive the pharmacokinetic (PK) profile of a patient, and

- an interactive user interface configured to display to the patient a time-varying therapeutic plasma protein level of the patient, the time-varying therapeutic plasma protein level based on an administered dose of a clotting factor VIII and the PK profile of the patient.