MWi Pharm Online

Portal manual

Introduction

What is MwPharm Online

MwPharm Online is a **web - based application**.
No additional plugins required. You can have all your data accessible anytime and anywhere.

About the **document**

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Document **history**

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1.00	07/10/2020	Michal Potůček	1st revision
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Table of **contents**

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Medical practitioners, clinical pharmacists and all the users of the software must always rely on their own professional judgment concerning the dosage of drugs. The MWPharm Online application can be a valuable aid to help the user creating an optimal dosage regime for the patient, but the reaction may differ in each individual patient. Mediware takes no charge or responsibility in case of any harm caused by the usage of the program. Its products have been tested in academic research as well as in clinical practices. As many other software products, this application can be improved further, so Mediware is very thankful for any suggestions made to upgrade MWPharm Online application.

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MwPharm is clinical pharmacokinetic program used primarily to establish proper dosing regimen which is determined by both the population pharmacokinetic parameters from a drug database being a part of MwPharm and individual patient physiological parameters.

The dosage regimen is determined using modeling of plasma drug concentration vs time- based on pharmacokinetic parameters from an extensive drug database and individual patient physiological parameters. The program can simulate and optimize the parameter values by curve-fitting to the measured data which enables to refine the dosage regimen. MwPharm is an efficient tool to conveniently arrange and easily visualize the pharmacokinetic data and generate comprehensive and well-arranged outputs in portable document format (PDF).

The program includes a database of specialized drug models together with their kinetic parameters.

Patient database contains current patient data such as age, sex, height, weight, serum creatinine level, liver function, etc. In addition to these common items, the database is also able to store patient medication history and individual kinetic parameters obtained during therapeutic drug monitoring.

Using MwPharm, it is possible to improve the drug prescription quality, adjust drug dose to prevent patient intoxication or underdosage, shift the emphasis in medicine from reaction to prevention and reduce quantity of the plasma drug concentration measurements.

Optimal drug dosing improves quality of life, helps avoid adverse drug reactions and shortens the hospitalization time resulting in the reduction of the overall healthcare costs.

The program was designed to:

- improve the drug prescription quality
- prevent patient intoxication
- prevent patient underdosage

- reduce the number of measurements of plasma drug concentration
- shorten the time spent in the hospital for the patient
- simplify the communication among doctors

1.1 Installation

The application does not need to be installed as it works in a web browser window.

The application is available at URL https://portal.mwpharm.online/

The latest version of:

Google Chrome

Mozilla Firefox

Microsoft Edge

Apple Safari

Opera

1.3 Supported operating systems

Windows 7

Windows 8

Windows 10

Windows 11

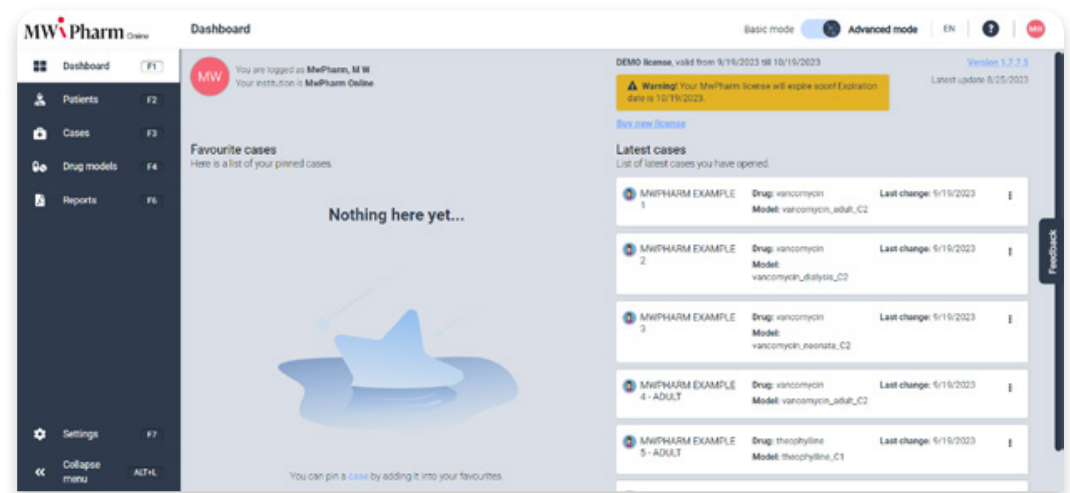macOS 10

macOS 11+

Android 5+

Linux Ubuntu

Linux Debian

Linux Mandriva

2 **MwPharm Online**

The dashboard is the first thing user see after logging into the application.

The dashboard is used to display the latest cases as well as the user´s favorite cases. A newly registered user will find here some Test cases.

2.1.1 MwPharm Online's Dashboard

2.1.2 Default example cases

Samples are used to get acquainted with the application. The user doesn't have to enter data immediately and can go through the already created samples.

To see the case on the desktop in the favourite section, use the button "Add to favourites" in a case detail and the given case will appear among your favorite cases on the dashboard. To remove the case from your favourites, open the context menu and select the option "Remove favourite".

On the "Dashboard", you can also find information about the validity of your license and use the link "Buy new license".

2.1.3 License validity period

The last important element on the "Dashboard" is the switch between the Basic and the Advanced mode. The MwPharm Online application's Basic mode is more suitable for new users. In the Basic mode, the application requires only the absolute minimum of the necessary input information. The application decides more options automatically.

The Advanced mode is more suitable for advanced users and the users who worked with an older version of the application like MwPharm++, MwPharm 4.0, and MwPharm DOS. In the Advanced mode, the application requires a larger amount of input information.

2.1.4 Basic - Advance mode switch

2.2 Patient and Case in Basic mode

To create a new patient, just click on the icon „Patient"on the main menu.
As the first step, you need to fill-in basic information about a patient.

2.2.1 New patient and case in Basic Mode

The mandatory data are...

Patient Number

The patient number is a unique identifier used to identify a patient by the user. You can choose any value as a unique identifier, but it must be unique within all the patients. Using the patient number, you can identify the patient without having to enter any personal information. The correct patient identifier is aspiring to eliminate confusion. Therefore, be careful when choosing an appropriate patient ID number. The usual way to fill in a patient ID number is to use an insurance number or unique hospital patient number. You can also use any other unique value.

Date of birth

The date on which the patient was born.

Optional data are...

Firstname and **Lastname**.

2.2.1 Medication condition

Body weight (Bw)

Body weight is a person´s weight in kilograms or pounds. A high Bw can be an indicator of high body fatness.

Body height (Bh)

Body height or stature is the distance from the bottom of the feet to the top of the head in a human body, standing erect. It is measured using a stadiometer usually in centimeters when using the metric system or feet and inches when using the imperial system.

Sex

Sex differences in human physiology are distinctions of physiological characteristics associated with either male or female humans. These can be of several types, including direct and indirect, direct being the direct result of differences prescribed by the Y-chromosome, and indirect being characteristics influenced indirectly (e.g. hormonally) by the Y-chromosome.

Race

The Caucasian race (also Caucasoid or Europid) is a grouping of human beings historically regarded as a biological taxon, which, depending on which of the historical race classifications is used, has usually included some or all of the ancient and modern populations of Europe, Western Asia, Central Asia, South Asia, North Africa, and the Horn of Africa.

Negroid (also known as Congoid) is a historical grouping of human beings, once purported to be an identifiable race and applied as a political class by another dominant non-negroid culture. The term had been used by forensic and physical anthropologists to refer to individuals and populations that share certain morphological and skeletal traits that are frequent among populations in most of Sub-Saharan Africa and isolated parts of South and Southeast Asia (Negritos).

Within Africa, a racial dividing line separating Caucasoid physical types from Negroid physical types were held to have existed, with Negroid groups forming most of the population south of the area which stretched from the southern Sahara Desert in the west to the African Great Lakes in the southeast.

Mongoloid or by more modern usage Eastern Eurasian, is a grouping of various peoples indigenous to Asia, North America, South America, and the Pacific Islands (with some exceptions). It is one of the outdated three races first introduced in the 1780s by members of the Göttingen School of History, the other two groups being Caucasoid (Western Eurasian) and Negroid.

Serum creatinine

A serum creatinine value means the level of creatinine in your blood and can indicate whether your kidneys are working properly.

2.3 **Patients** in Advanced mode

The Patients page shows the list of all patients including their personal data allowing you to search, delete, recover, create, and edit the records.
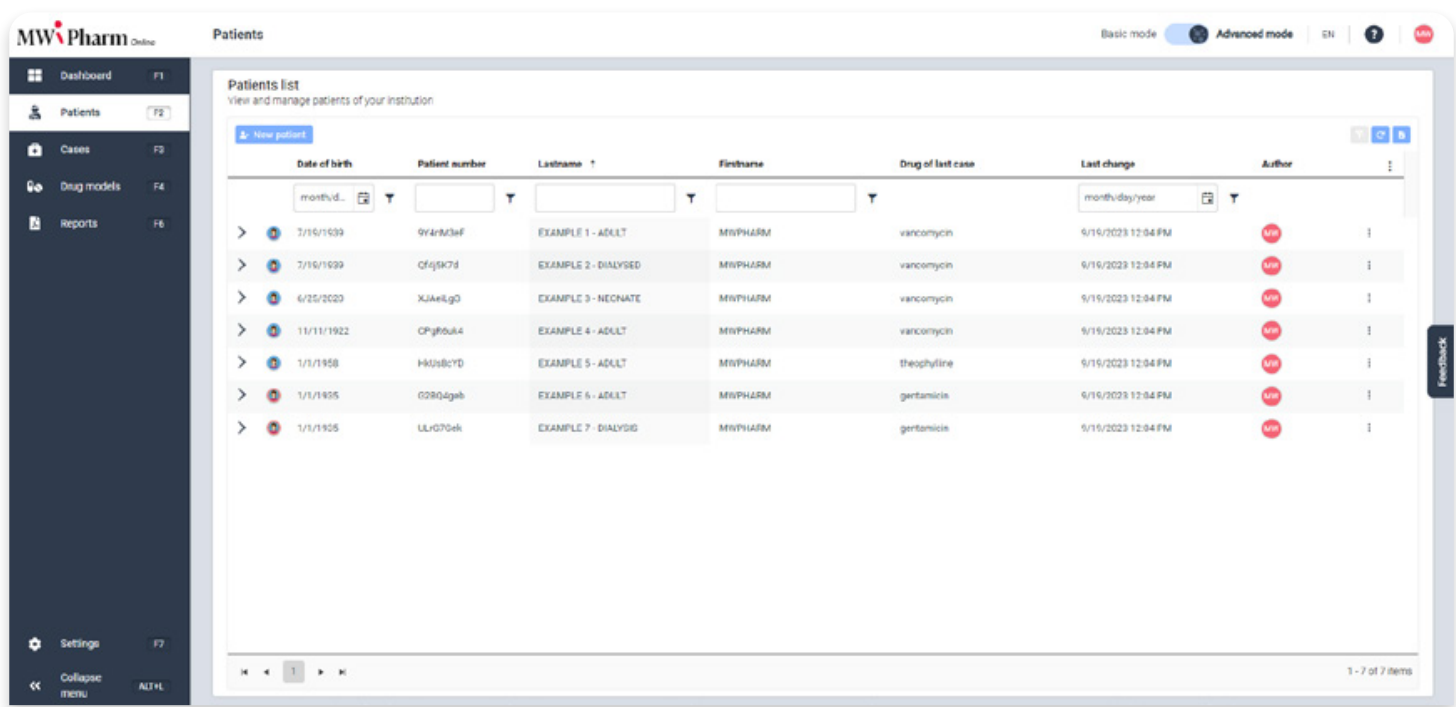

2.3.1 Patient list

Filter by **date of birth** enables us to search for a patient using the patient's date of birth.

Filter by **patient number** enables to search for a patient using the patient's identification number.

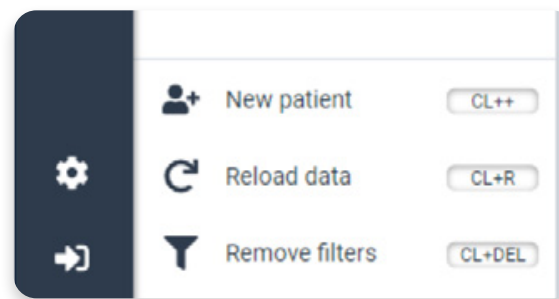**Filter** by **name** item enables to search the patient using any of the patient's first or last name.

Filter by **drug of the last case** enables to search for records in the drug history of the selected patient.
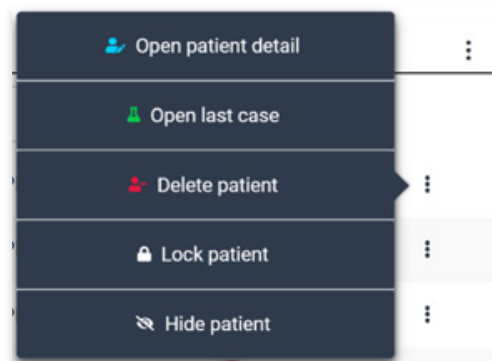
2.3.1.1 Patient's context menu

2.3.2 Create new patient

To create a new patient, just click on the button "New patient" in the menu.

2.3.2.1 Patient's list menu

2.3.3 **Basic patient data**

2.3.3.1 Basic patient data

Mandatory data are...

Patient Number

The patient number is a unique identifier used to identify the patient by the user. This field is automatically prefilled with a random value generated by the application. You can choose any value as a unique identifier, but it must be unique within all the patients. Us- ingUsing the patient number, you can identify the patient without having to enter any personal information. The correct pa- tientpatient identifier is aspiring to eliminate confusion. Therefore, be careful when choosing an appropriate patient ID number. The usual way to fill in the patient ID number is to use an in- suranceinsurance number or unique hospital patient number. You can also use any other unique value.

Date of birth

The date on which the patient was born.

Optional data are...

Family doctor
The general practitioner of the family.

Requesting physician
A person asking for the opinion of a pharmacologist on how to dose a drug and has the final word and responsibility for dosing the patient.

Room number
The room number serves purely for identification purposes where the patient is located. It can be useful for an application user visiting the patient.

Ward
The ward number serves purely for identification purposes where the patient is located. It can be useful for an application user visiting the patient.

Hospital
The hospital name serves purely for identification purposes where the patient is located. It can be useful for an application user who handles requests for multiple hospitals.

Health insurance
The health insurance company name is used for administrative and billing purposes.

Country
The country serves purely for identification purposes where the patient is located. It can be useful for program user who handles requests for multiple hospitals.

Note
Allows you to store information about a patient – whether for medical or administrative purposes. For example, a patient´s medical history may be indicated in this field.

A user can also fill in personal and sensitive information but only if he checks the checkbox "I wish to fill in personal and sensitive information". The default setting for this option can be changed in the settings. Then (there) can be filled also personal information like firstname, lastname, e-mail, phone number, and address.

2.3.3.2 Personal data

2.3.4 **Medication condition**

When you save the "Basic patient data", the application unlocks and automatically switches to the section "Medical condition".

2.3.4.1 Physical data

Age
Is a period of time someone has been alive.

Body constitution
can be normal, body builder, obese, overweight.

Body height (BH)
Shows the height of a person usually measured in centimeters.

Body Mass Index (BMI)
Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. BMI can be used to screen for weight categories that may lead to health problems but it is not diagnostic of the body fatness or health of an individual.

Body Surface Area (BSA)
The body surface area (BSA) is the measured or calculated surface area of a human body.

Body weight (BW)
Body weight is a person's weight in kilograms or pounds. A high Bw can be an indicator of high body fatness.

Country
Serves purely for identification purposes where the patient is located. It can be useful for program user who handles requests for multiple hospitals.

Creatinine clearance rate (CCr or CrCl)
Is the volume of blood plasma that is cleared of creatinine per unit time and is a useful measure for approximating the GFR.

Date of birth
Is the date on which the patient was born

Family doctor
Is family or general practitioner.

Ffm (Fat free mass)
is an alternative to body mass index which accounts for a person's muscle mass.

Glomerular filtration rate (GFR)
Describes the flow rate of filtered fluid through the kidney.

Health insurance
Means health insurance company name and it is used for administrative and billing purposes.

Hospital
Serves purely for identification purposes where the patient is located. It can be useful for when you will be handling requests from different hospitals.

Lean body mass (Lbm)
is defined as Body Weight - (Body Weight * Body Fat %)
LBM (men) = 0.407 * weight + 0.267 * height * 100 - 19.2 L
LBM (women) = 0.252 * weight + 0.473 * height * 100 - 48.3

Liver function
is the value that is used to assess the excretory function of the kidneys in percentage (100% = Normal function, 75% = Mild function, 50% = Moderate function, 25% = Severe function)

Pathology note
Is a space for making notes to the patient.

Patient Number
Can be any number chosen for the patient which is different from the others. It is advised to be the patient's ID number or insurance number to avoid matching number with other patients. The number is used so the user can find the patient easier, without having to enter all his personal information.

Period
Is the number of weeks that the fetus has been in the womb.

Pma (Postmenstrual age in weeks)
Is gestational age plus chronological age.

Race
Is defined as "a category of humankind that shares certain distinctive physical traits." There are 4 main races: namely white/Caucasian, Mongoloid/Asian, Negroid/Black, and Australoid. This is based on a racial classification made by Carleton S. Coon in 1962.

Requesting physician

Is the person who is asking for your opinion how to dose a drug and has the final word and responsibility for the dosing patient.

Room number

Serves purely for identification purposes. It means where the patient is located and can be useful for program user who wants to visit the patient.

Serum creatinine

Presents the level of creatinine in the blood. It shows whether your kidneys are working properly or not.

Sex

Differs in humans from physical appearance related to either males or females.

Ward

Serves purely for identification purposes. It means where the patient is located and can be useful for program user who wants to visit the patient.

Renal data

CTRL+SHIFT+2

Renal function
JELLIFFE21

RF Weight Measure
LBM

Serum creatinine (µmol/L)
70.00

Liver enzymatic activity (%)
Normal (100)

Creatinine clearance N
89.49 mL/min/1.73m²

Creatinine clearance
95.60 mL/min

2.3.4.2 Renal data

RF Schwartz Measure

Renal Function Schwartz Measure Equation is Clcr = ((RF Schwartz constant k)*(RF Schwartz Measure Weight)/Cr)*88,5

RF Schwartz Constant k

Renal Function Schwartz default constant is 0.55 (0.5-20years)

Renal function

Renal function, in nephrology, is an indication of the kidney condition and its role in renal physiology. Glomerular filtration rate (GFR) describes the flow rate of filtered fluid through the kidney. Creatinine clearance rate (CCr or CrCl) is the volume of blood plasma that is cleared of creatinine per unit time and is a useful measure for approximating the GFR. Creatinine clearance exceeds GFR due to creatinine secretion, which can be blocked by cimetidine. In an alternative fashion, overestimation by older serum creatinine methods resulted in an underestimation of creatinine clearance, which provided a less biased estimate of GFR. Both GFR and CCr may be accurately calculated by comparative measurements of substances in the blood and urine or estimated by formulas using just a blood test result (eGFR and eCCr).

The creatinine clearance of a patient is taken as a measure for the patient's renal function. MwPharm offers up methods for calculating the creatinine clearance from one or more creatinine levels (Cockcroft and Gault, Jelliffe 1, and Jelliffe 2). The Schwartz children formula is only available if the subject is younger than 20. It is the only available method if the subject is younger than 18.

The Cockcroft & Gault and Jelliffe 2 methods take the lean body mass (LBM) as an argument instead of body weight (BW) because the creatinine production is dependent on the amount of muscle tissue but independent from fat tissue. This ensures that the formula also performs well for people with overweight.

The Jelliffe 2 method is suitable for calculating the creatinine clearance in case of an unstable kidney function. It is the only method that takes the non-renal creatinine clearance into account with patients suffering from chronic bad kidney function.

For every available method both the absolute creatinine clearance expressed in mL/min as well as the normalized creatinine clearance expressed in mL/min/1.73m2 is displayed. Both these values are displayed separately again for the currently selected method.

The app can automatically assign a unit to an entered creatinine level depending on its magnitude. If the entered value is larger than 20, the unit is assumed to be umol/L. If the entered value is smaller than 20, the unit is assumed to be mg/dL.

Serum creatinine

A serum creatinine value means the level of creatinine in your blood and can indicate whether your kidneys are working properly.
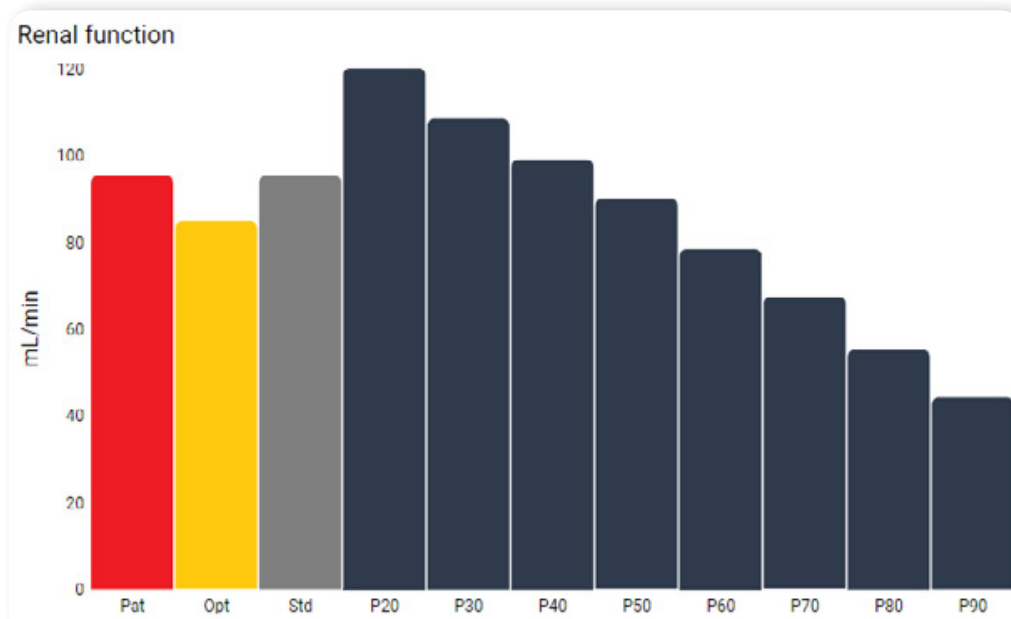
Liver function

Liver function value is used to assess the excretory function of the kidneys in percentage (100% = Normal function, 75% = Mild function, 50% = Moderate function, 25% = Severe function).

Pathology note

Allows making notes about the patient.

Renal function chart describes the renal function for...

2.3.4.2.1 Renal function chart

Pat
Current patient based on inserted data

Opt
Optimal renal functionality for current patient. If the patient will be healthy and typical.

Std
Standard patient. The standard patient is patient from literature which is male, 55 years, 175 cm and 70 kg.

P20
A healthy version of our patient with an age corresponding to 20 years.

P(x)
A healthy version of our patient with an age corresponding to **x** years.

After creating/opening the patient, it is possible to create a new case via the "New case" button. Then you need to choose the drug substance and model.

2.4.1 Cases in Advanced mode

Then you need to choose the drug substance and model.

Model name	Owner	Last change	
⦿ vancomycin_adult_C2	MWi	3/24/2022 3:00 PM	AGE 18-999Y
⦿ vancomycin_C1	MWi	3/24/2022 3:00 PM	
⦿ vancomycin_child_C2	MWi	3/24/2022 3:00 PM	AGE 28D-18Y
⦿ vancomycin_dialysis_C2	MWi	3/24/2022 3:00 PM	
⦿ vancomycin_ICU	MWi	3/24/2022 3:00 PM	
⦿ vancomycin_neonate_C2	MWi	3/24/2022 3:00 PM	AGE 0-28D
⦿ vancomycin_obese_C3	MWi	3/24/2022 3:00 PM	AGE 18-999Y E66

2.4.2 Model selection

The Kinetics section shows the population and individual pharmacokinetic parameters calculated based on the selected renal function.
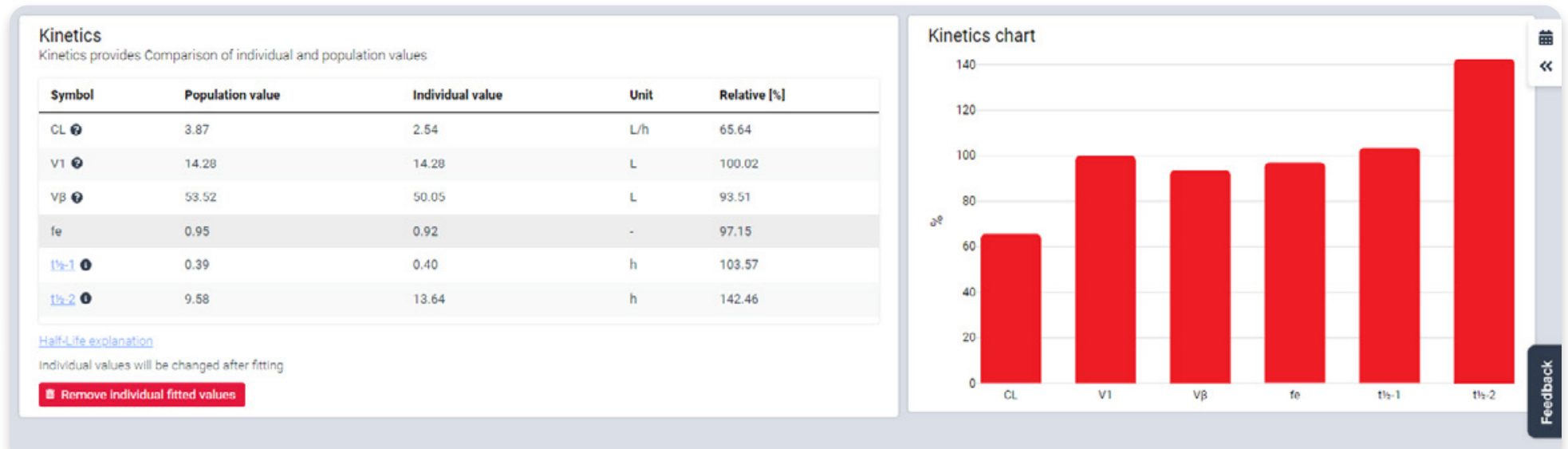
2.5.1 Kinetics table and chart

CL is creatinine clearance

V,V1 are distribution volumes

Fe is elimination constant

t1, t2 are biologic half-times

Because the population pharmacokinetic parameters are used as the individual pharmacokinetic parameter values the comparison of individual and population parameters shows a 100% match as indicated by the bar graph.

2.6 **Dosing section** in Basic mode

In the basic mode, the user can easily compare the offered dosing regimens. The client can have the dosage suggested according to the concentration or according to the AUC (Area Under Curve).
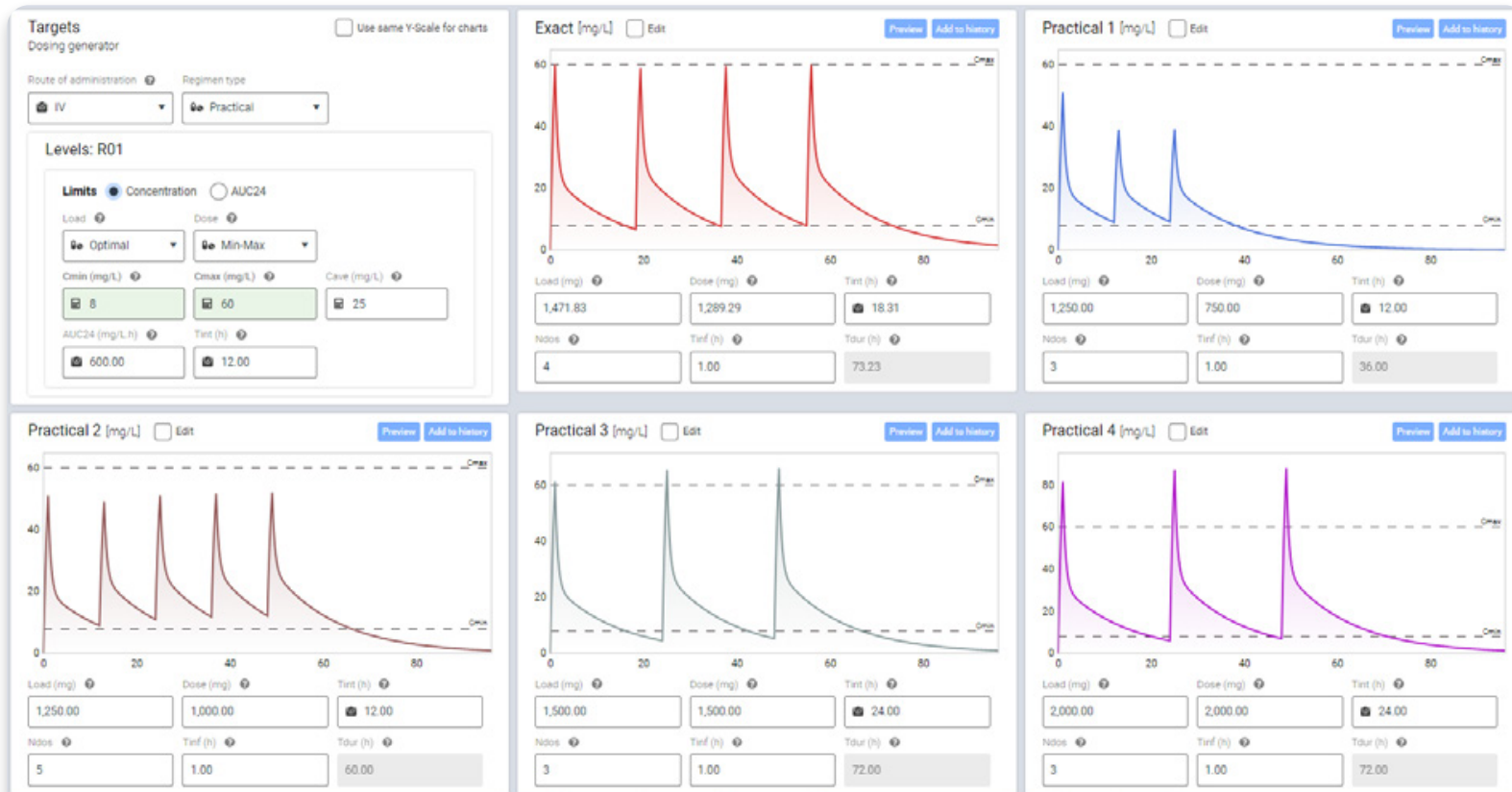
2.6.1 Dosage regimens in Basic Mode

Exact dosing

Exactly calculated dosage irrespective of the available dosages and typical times (It is an "exact" calculation result). This is the mathematically best dosing.

P01 - P04 – Practical regimens

Dosage patterns precalculated based on available drug dosages and typical time intervals between administrations.

The parameters are as follows:
- Load (Loading dose) – loading dose size [mg]
- Maintenance (maintenance dose) – maintenance dose size [mg]
- Tint (time interval) – time interval between maintenance doses [h]
- Ndos (number of doses)
- Tinf (time of infusion) – infusion duration [h]
- Tdur (time duration) – complete dosage regimen duration [h]. The user field enables to manually adjust the dosage and its conditions.

2.7 Dosing section in Advanced mode

A dosing bookmark enables to set, calculate, and compare the individual dosage regimens under different conditions.

2.7.1 Dosage regimens in Advanced mode

The table in the left part of the page shows the dosage regimens...

Exact dosing
Exactly calculated dosage irrespective of the available dosages and typical times (it is an "exact" calculation result). This is the mathematically best dosing.

P01 - P04 – Practical regimens
Dosage patterns precalculated based on available drug dosages and typical time intervals between administrations.

The parameters are as follows:
- Load (Loading dose) – loading dose size [mg]
- Maintenance (maintenance dose) – maintenance dose size [mg]
- Tint (time interval) – time interval between maintenance doses [h]
- Ndos (number of doses)
- Tinf (time of infusion) – infusion duration [h]
- Tdur (time duration) – complete dosage regimen duration [h] User field enables to manually adjust the dosage and its conditions.

Expand table for more information:
- pSS (Steady state) - Percentage steady state after Ndos dosages or 100% when reporting steady state levels
- Max – The drug dose size is adjusted so that it is constant depending on the entered time interval between the maintenance doses.
- Tmax - Time of maximum (Tmax) or peak sample (Tpeak)
- Min - Time of maximum (Tmax) or peak sample (Tpeak)
- TMin - Time of minimum (Tmin) or trough sample (Ttrough)
- Peak - Predicted peak level
- TPeak - Time of Peak
- Trough - Predicted trough level
- TTrough - Time of Trough
- Ave - Predicted average (Ave) or area under the curve (AUC24) level
- Auc24 - Area under the curve normalized to 24H
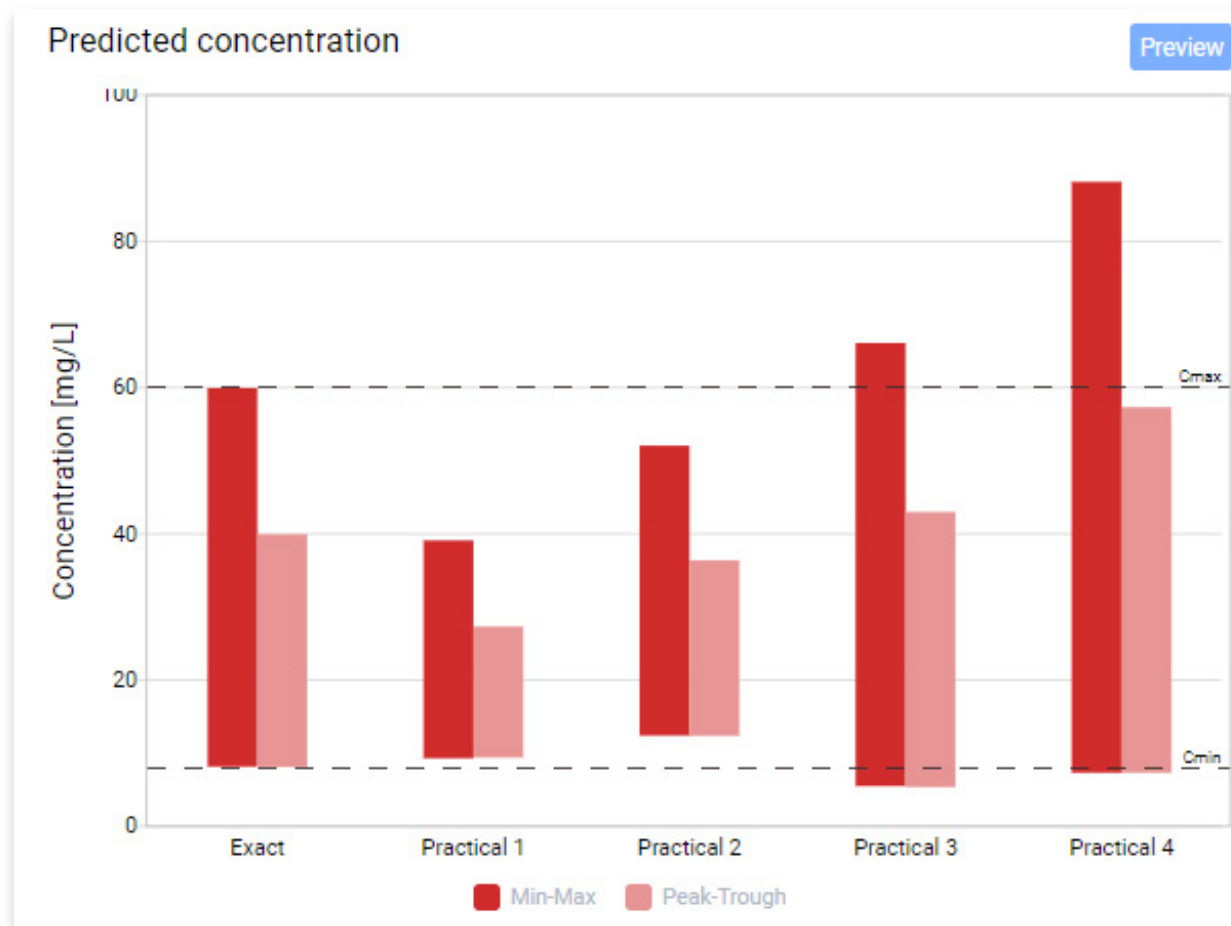
Dosing section in Advanced mode

Dosing regimens can be compared by the chart with predicted concentration
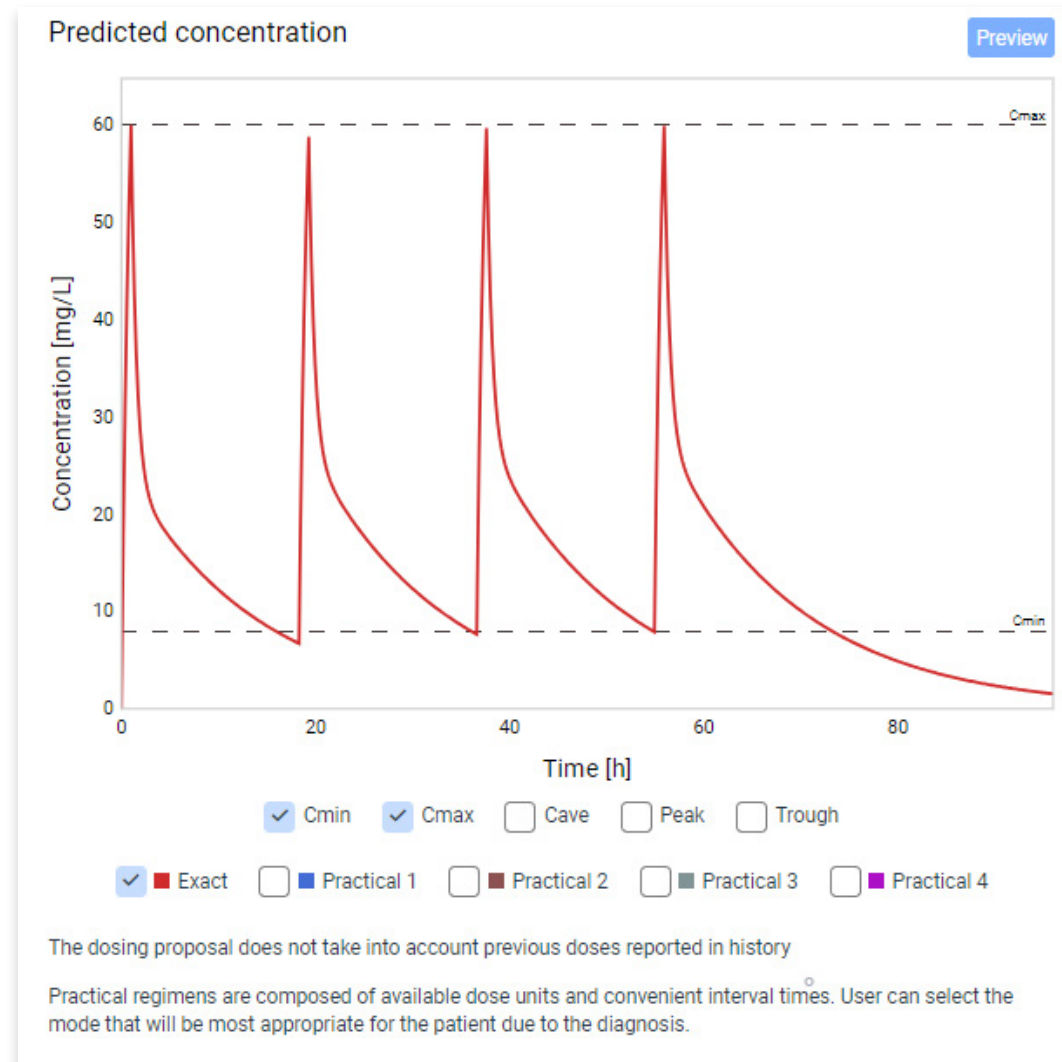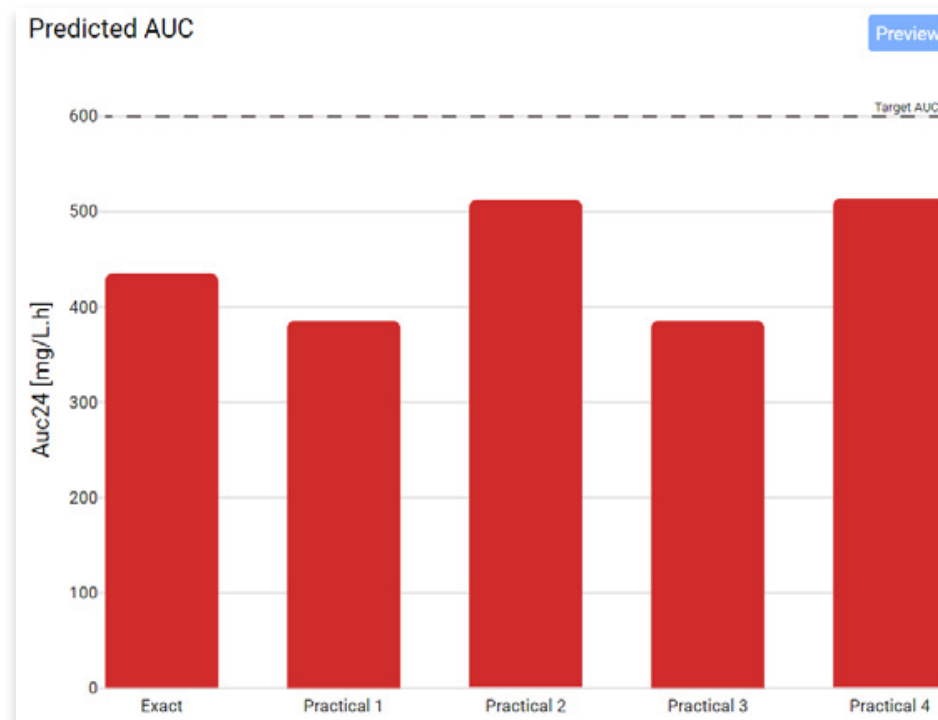

2.7.2 Predicted concentration

Dosing can be calculated based on the Cmin/Cmax therapeutical windows

2.7.3 Predicted regimens concentration based on Cmin/Cmax level and
based on Peak-Trough level

Dosing section in Advanced mode

Dosing can be calculated based on AUC24 target

2.7.4 Predicted AUC for regimens

Dosing section in Advanced mode

The History section contains three record types: records of the administered drugs, records of observed concentrations, and records of measured patient values.

2.8.1 History section

The table has the following column...

Date
Drug administration date

Time
Drug administration time

Roa
Route of administration - Oral, Intravenous, Infusion, Intramuscular

Value
Dose

No
Number of drug doses

Tint
Time interval between doses

Tinf
Infusion duration [h]

Conc
Plasma concentration [mg/l]

Weight
Body weight [kg]

Creatinine
Creatinine clearance [ml/min]

Liver
Liver health [%]

cysC
Cystatin C [mg/l]

Note
Free text field

The simulation curve shows the plasma drug concentration vs. time assuming the patient's pharmacokinetic parameters. The deviations of the points representing the values of observed concentrations from the simulation curve indicate the difference of the patient's individual pharmacokinetic parameters from the population pharmacokinetic parameters.

Conc

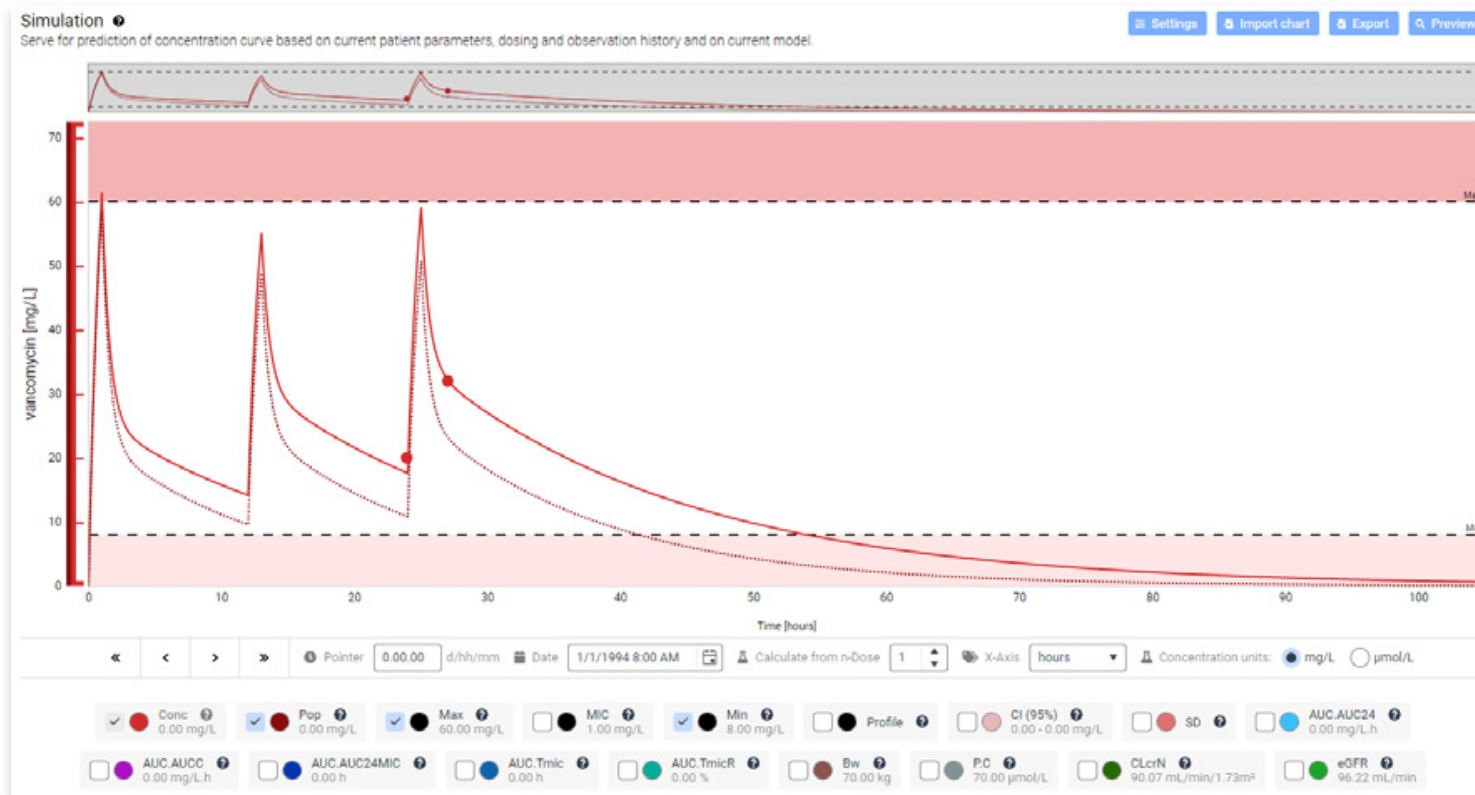Concentration [mg/L] based on population parameters before first fitting and concentration based on individual model parameters after successful fitting
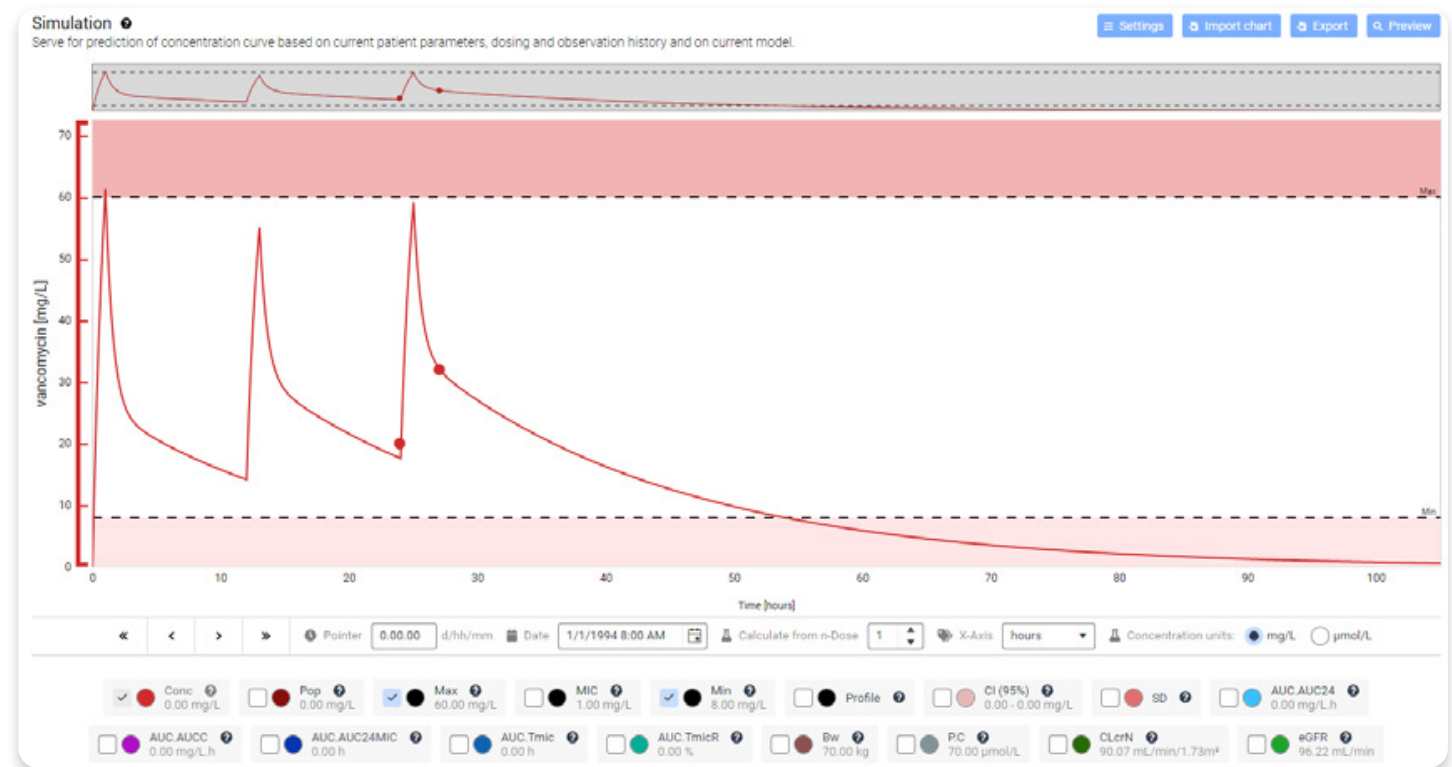
2.9.1 Simulation section – Predicted concentration based on currently the most accurate and available data and based on data in history section.
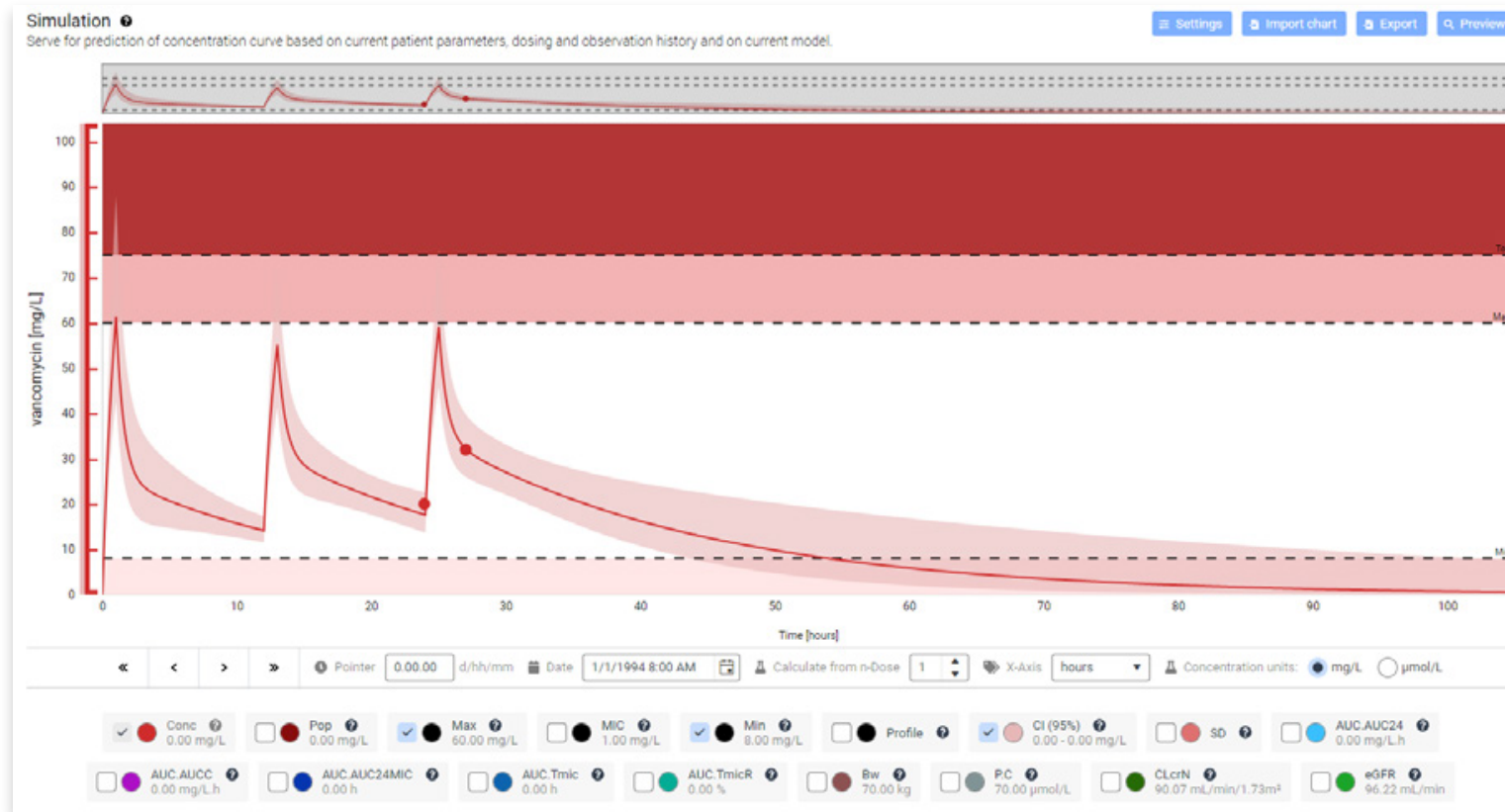
Pop

Concentration [mg/L] based only on population model parameteres

2.9.2 Simulation Section – Predicted concentration based on population
model parameters and data in history section

Ci

Confidence interval [mg/L]. Available after fitting
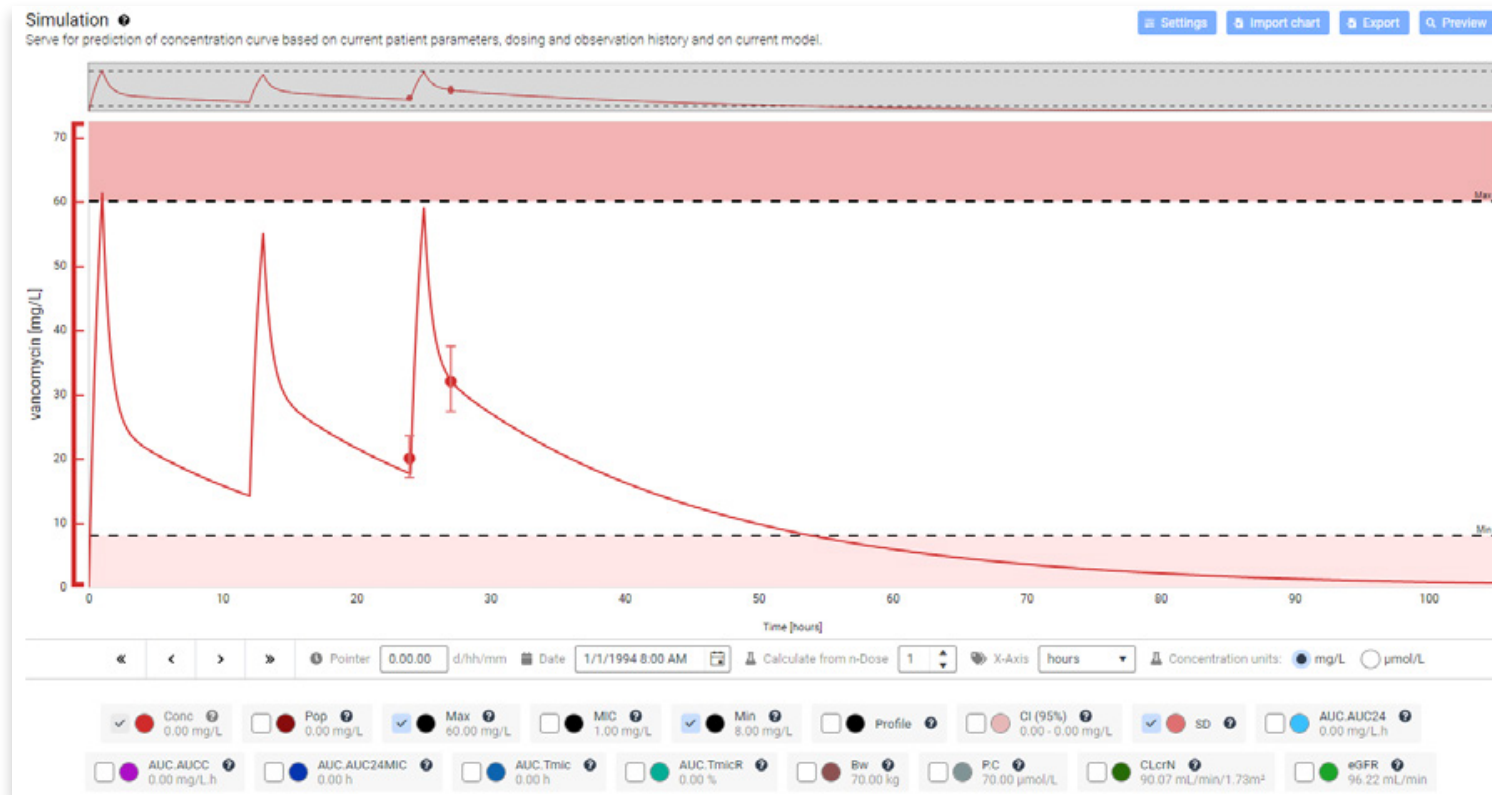

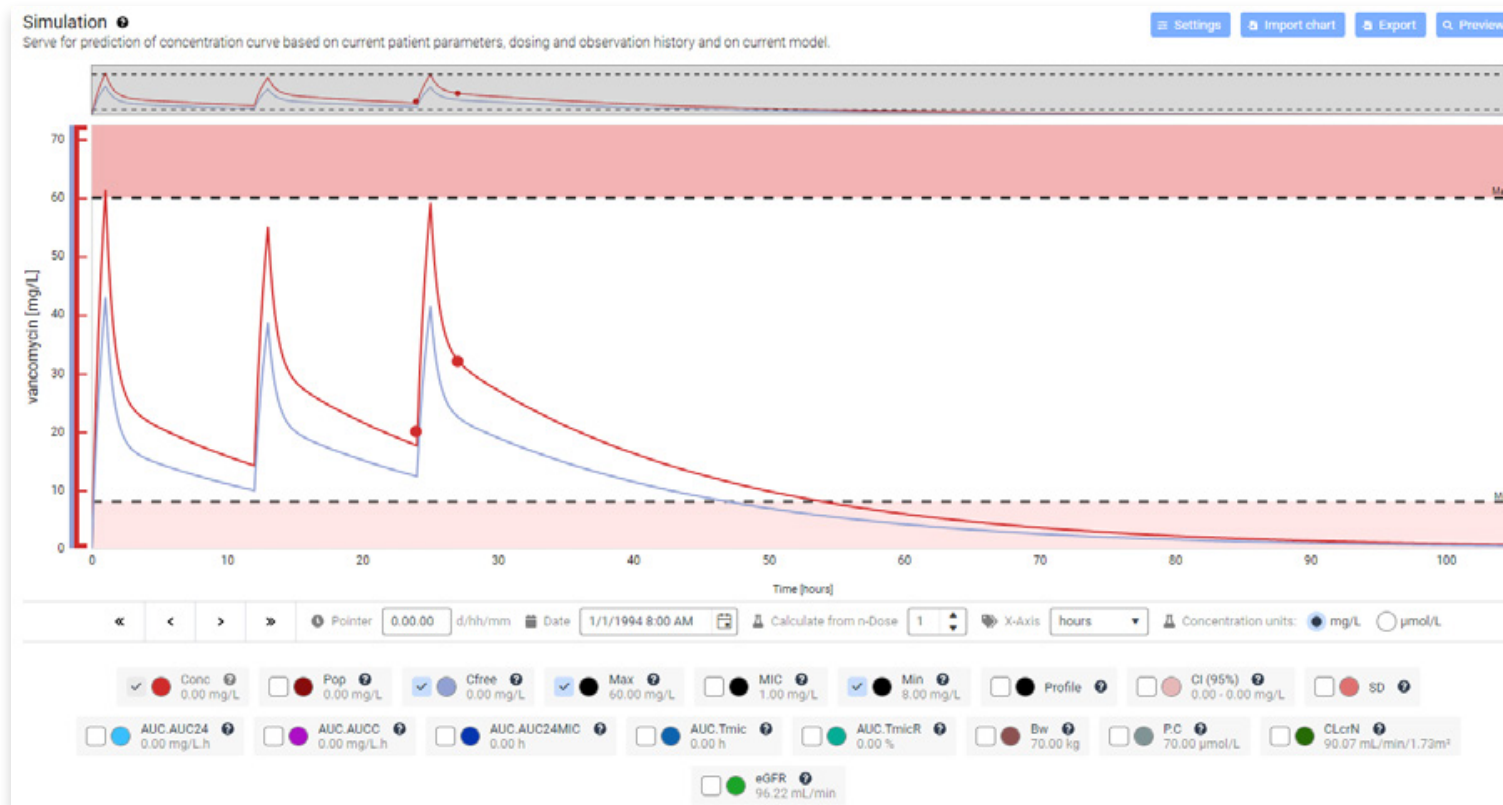2.9.3 Simulation Section – Predicted confidence interval

SD

Standard Deviation of observations [mg/L]. Available after fitting

2.9.4 Simulation Section – Calculated Standard Deviation of observations

Cfree

A dose calculation must always be based on a differential model in case the PK parameters are based on Cfree [mg/L].

2.9.5 Simulation Section - Cfree

Cmin

Minimum required concentration [mg/L]

Cmax

Maximum required concentration [mg/L]

Ctox

Toxical concentration [mg/L]

Ccr

Creatinine clearance rate [µmol/L]

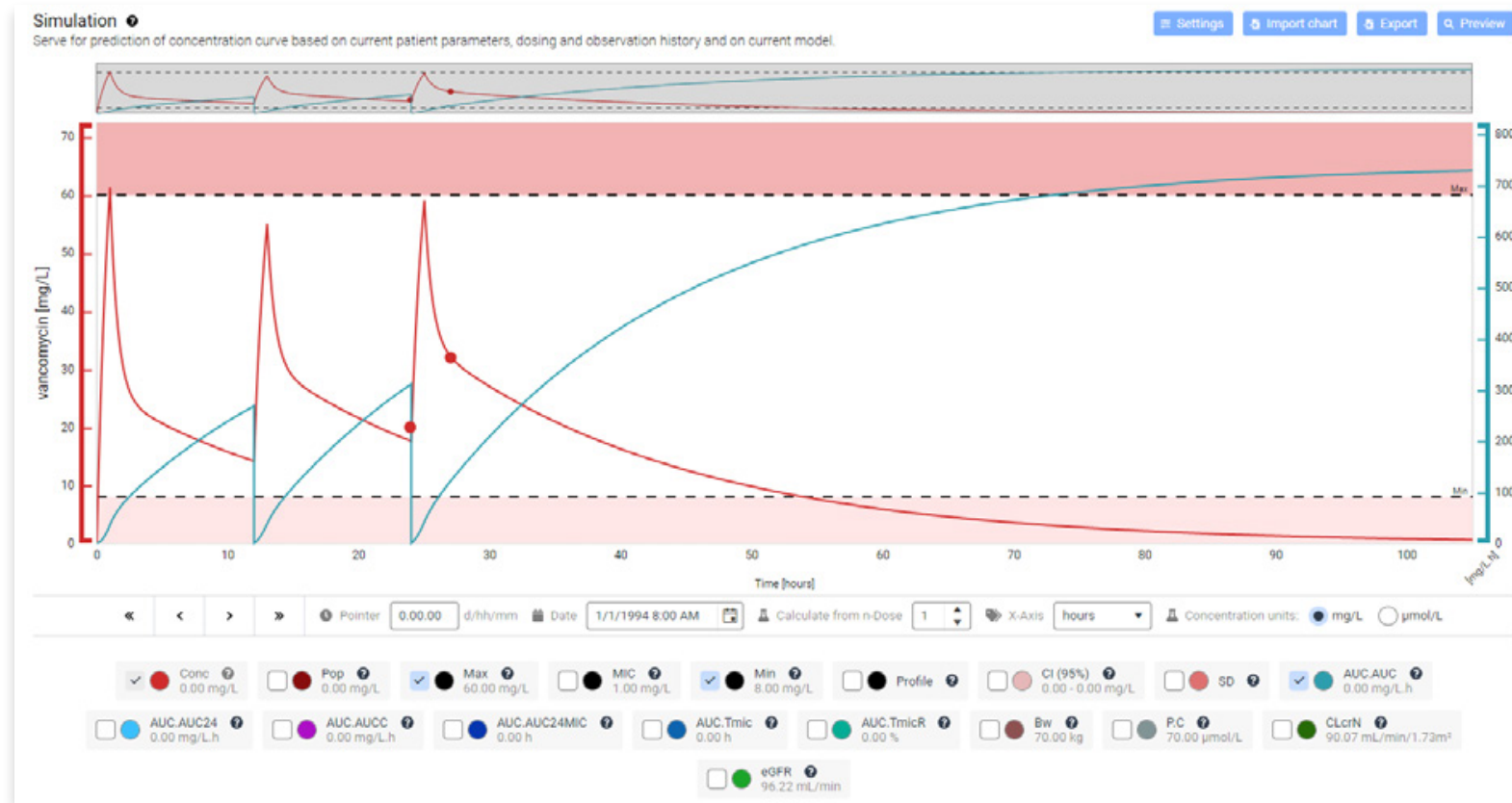**Total**

Total amount of drug substance [mg]

Lbmc

Lean body mass corrected . Lbmc = (Bw – Lbm) * Fd + Lbm. The amount of fat is (Bw –Lbm) and Fd is the fat distribution factor
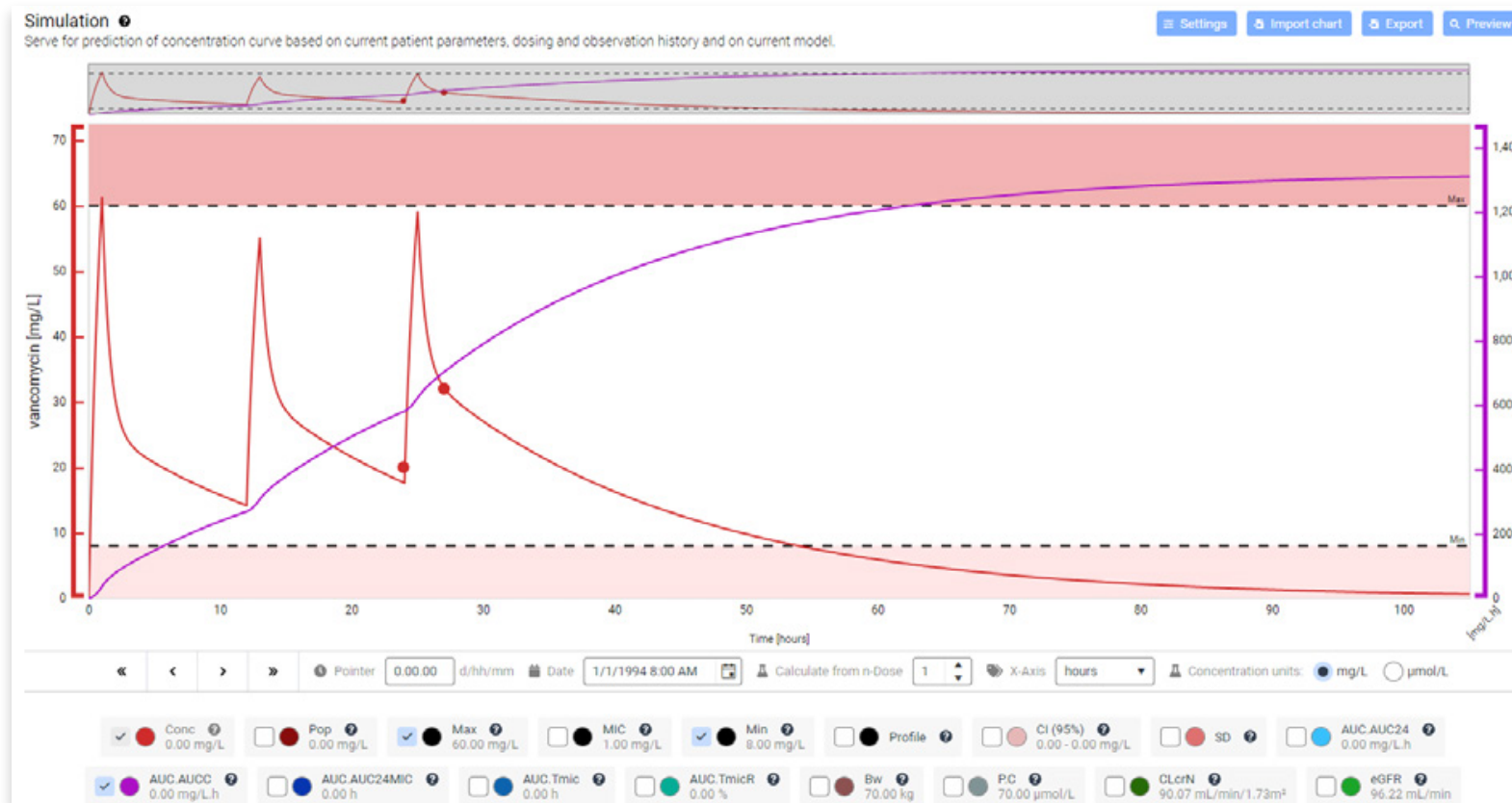
Bw

Body weight [kg]

AUC
Area Under Curve [mg/L.h]

2.9.6 Simulation Section – Area Under Curve for each dose
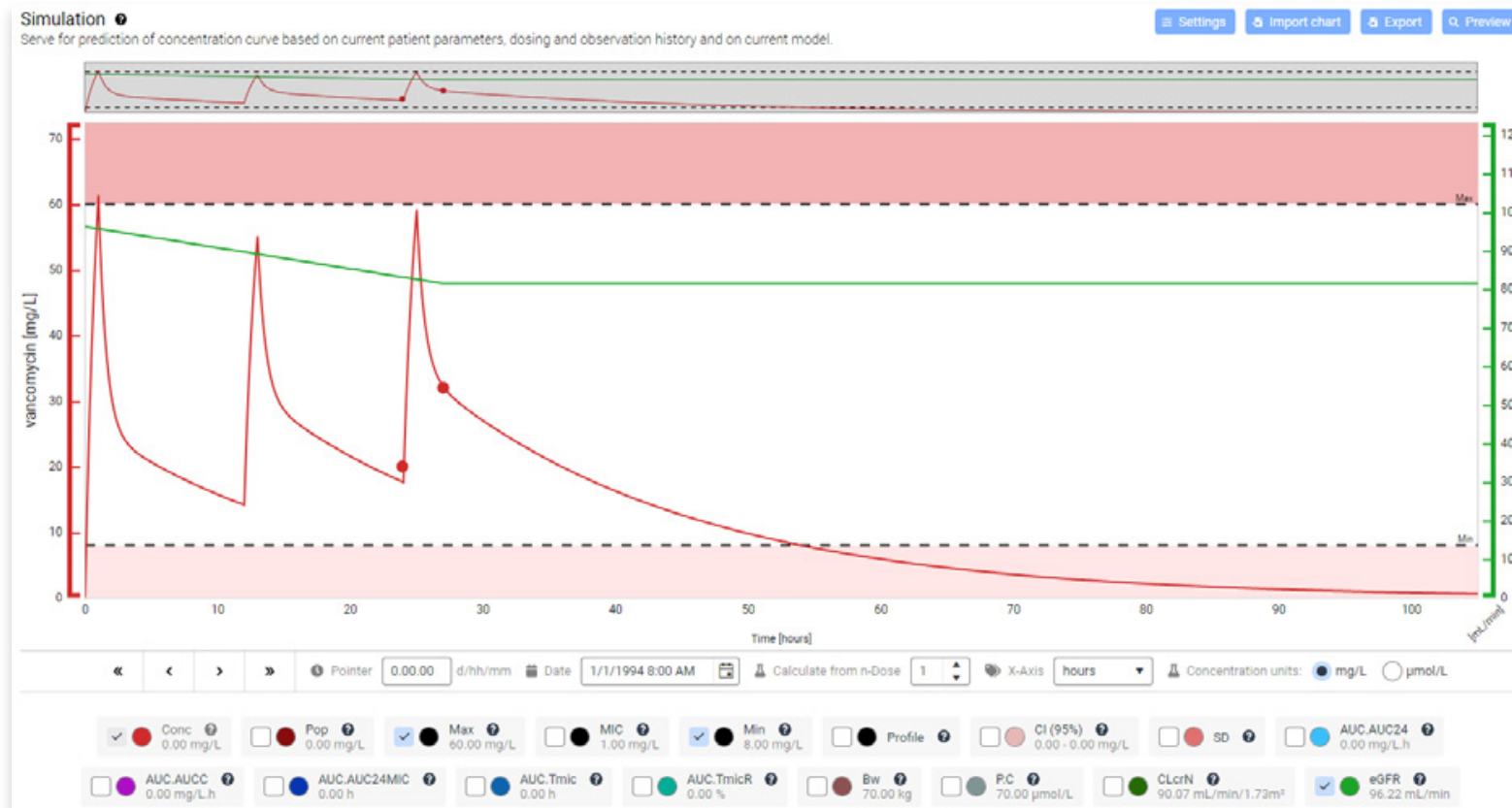
AUCC
Area Under Curve Cumulative [mg/L.h]

2.9.7 Simulation Section – Area Under Curve Cumulative

eGFR
Estimated Glomerular Filtration Rate [ml/min]

2.9.8 Simulation Section – Estimated Glomerular Filtration Rate

eGFRn

Estimated Glomerular Filtration Rate Normalized on 1.73m2 [ml/min]

BSA

Body Surface Area – The body surface area is the measured or calculated surface area of a human body [m^2].

The Fitting section displays a graph with a curve modified by introducing the parameter values resulting from the optimization. The optimization requires "observation points", i.e. measured drug concentration values in a patient at the particular time, based on which the simulation curve is to be optimized (adapted to the values measured directly in the patient). The optimization outputs are individual patient parameters saved to the database for the particular patient and drug to be applied to the calculation of dosage in the regimen section and to the simulation in the simulation section.

If the individual parameters for the particular drug and patient are available, they are automatically applied in the calculations instead of the population parameters. Their values are listed below the chart. A comparison of the parameter values derived from the optimization and population parameter values will indicate the difference of the individual pharmacokinetic parameter values for the selected patient from the population pharmacokinetic parameters.

The optimization can be performed using the Bayes method.

Fitting (Fitted) ❓
Serves for calculation of individual patient parameters. ❓

✔ ❓ Use bayes   ≡ Settings   🔍 Preview   🗑 Delete individual values

Filters   ✔ Parameters used for fitting   ☐ Common parameters   C0 wizard   🗒 Generate SD values

Parameter	Unit	Alias	Population value	SD	Individual value	SE	Fitting type	Distribution
C01.C0	mg/L	-	-	-	-	-	Fixed	Log-Normal
C01.V ❓	L/kgLbmc	-	0.21	0.042	0.21	0.04	Bayesian	Log-Normal
C02.kyx	1/h	-	0.48	0.12	0.496	0.118	Bayesian	Log-Normal
C02.kxy	1/h	-	1.12	0.28	1.114	0.264	Bayesian	Log-Normal
ME.CL ❓	L/h/1.85m²*	-	0.21	0.042	0.207	0.041	Bayesian	Log-Normal
RE.CL ❓	-	-	0.75	0.248	0.478	0.071	Bayesian	Log-Normal

2.10.1 Concentration prediction based on a fitted model with individual parameters compared to concentration prediction based on a model with population parameters.

The application also offers the possibility to print all processed data and cases via the Reports section.
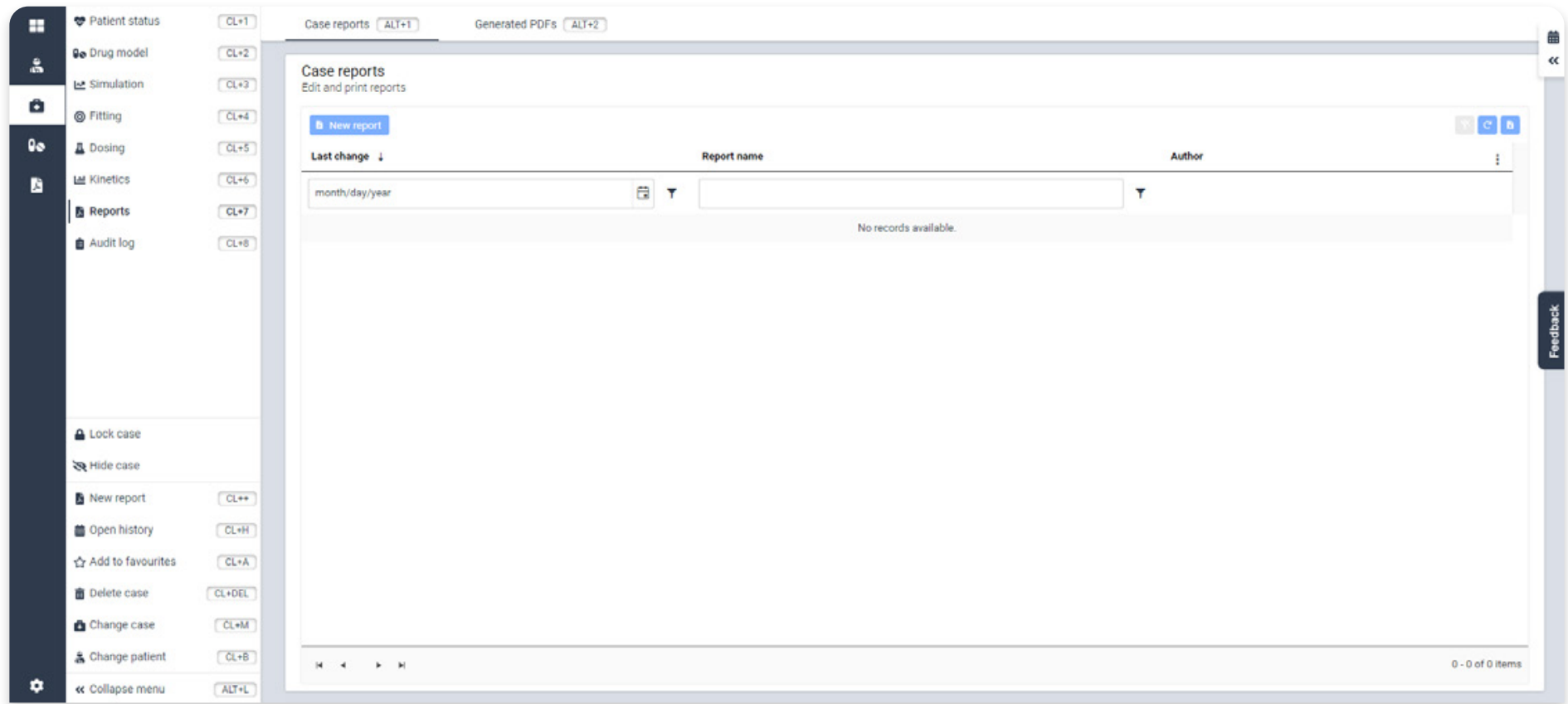
2.11.1 Reports Section

Each case can be printed in ready-made templates via a section "Reports"on the menu. Start with "Create report" button (top right corner).
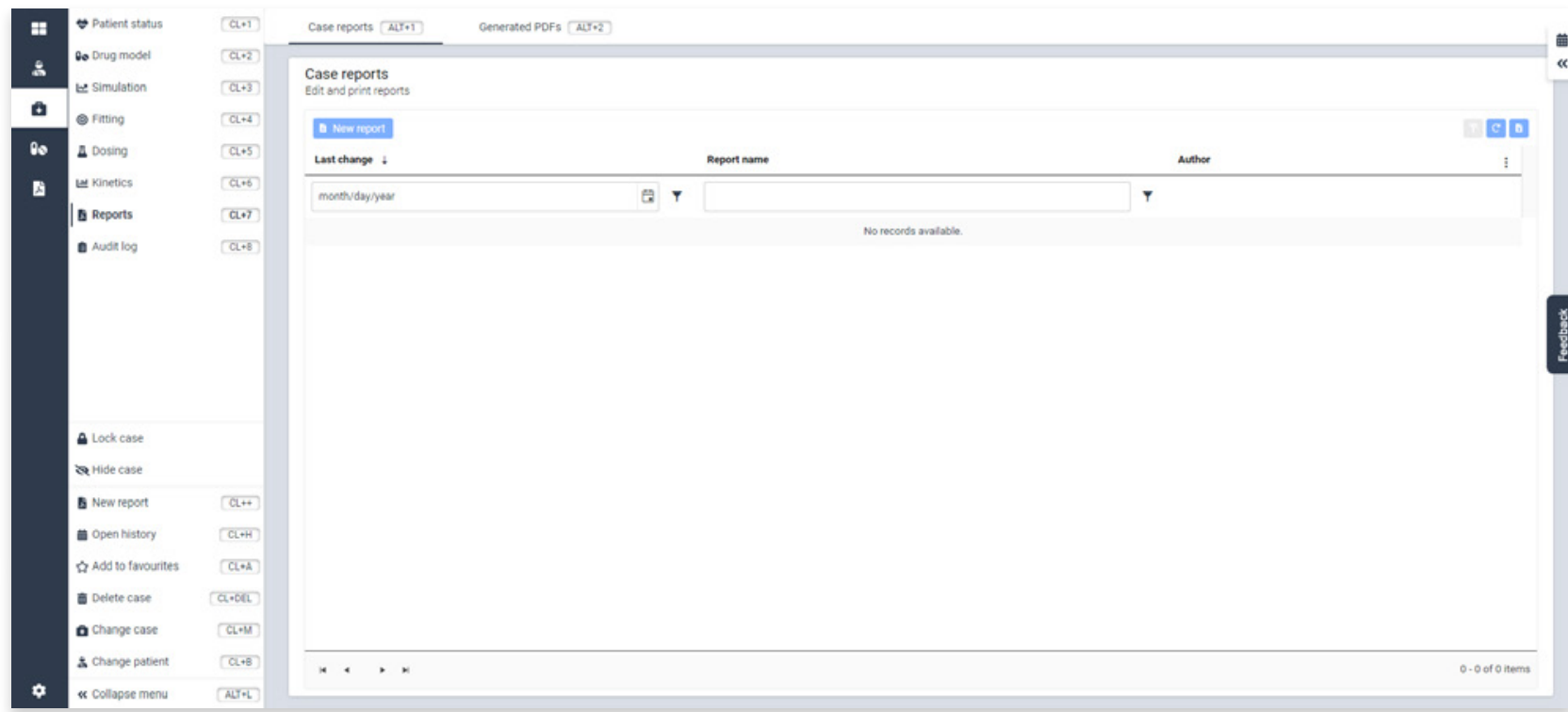
2.11.2 Reports section – Default report templates

When we select the template the report will be created. We can then open the report and see the preview of the report. You can the add the report to the case...

2.11.3 Report preview

Reports section

Each part of the report can be easily adjusted by icon ⚙

2.11.4 Report part adjustment

The user can also easily add a new part to the report by "report component menu". Each component to report can be "dragged & dropped" by mouse.

The final report can be saved in the application and also printed to PDF.

2.11.6 – Save report as PDF

2.11.5 – Report component menu

2.12 Two-factor authentication (2FA)

To make the online account more secure from threads, the user can enable an option called "two-factor authentication" under User Settings. In addition to the username and the password, you will receive a unique code on your mobile phone every time you log in.

To use two-factor authentication go through the following steps:

1. Download a two-factor authenticator app, like Google Authenticator or Microsoft Authenticator, from your mobile Play Store (Android user) or App Store (IOS user).

2. Using the two-factor authenticator application, scan the QR code or enter the key into your two-factor authenticator app.

3. Once you have scanned the QR code or input the key above, your two-factor authenticator app will provide you with a unique code. Enter the code in the confirmation box in the application.

After that, every time the user will log in, the application will require not only his/her username and password but also unique code during each sign-in process.
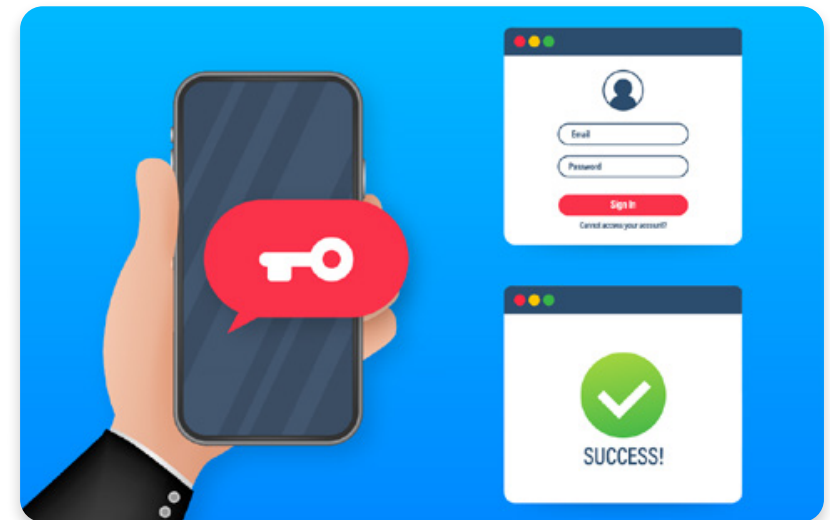
A

Age
Is a period of time someone has been alive.

B

Body constitution
Can be normal, body builder, obese, overweight.

Body height (BH)
Shows the height of a person usually measured in centimeters.

Body Mass Index (BMI)
Is a person's weight (kg) divided by the square of height (m). A high BMI can be an indicator of high body fatness.

Body Surface Area (BSA)
Is the measured surface area of a human body.

Body weight (BW)
Shows a person's weight in kilograms or pounds.

C

Country

Serves purely for identification purposes where the patient is located. It can be useful for program user who handles requests for multiple hospitals.

Creatinine clearance rate (CCr or CrCl)

Is the volume of blood plasma that is cleared of creatinine per unit time and is a useful measure for approximating the GFR.

D

Date of birth

Is the date on which the patient was born.

F

Family doctor

Is family or general practitioner.

Ffm (Fat free mass)

is an alternative to body mass index which accounts for a person's muscle mass.

G

Glomerular filtration rate (GFR)

Describes the flow rate of filtered fluid through the kidney.

H

Health insurance

Means health insurance company name and it is used for administrative and billing purposes.

Hospital

Serves purely for identification purposes where the patient is located. It can be useful for when you will be handling requests from different hospitals.

L

Lean body mass (Lbm)

Is defined as Body Weight - (Body Weight * Body Fat %)
LBM (men) = 0.407 * weight + 0.267 * height * 100 - 19.2 L
LBM (women) = 0.252 * weight + 0.473 * height * 100 - 48.3

Liver function

Is the value that is used to assess the excretory function of the kidneys in percentage (100% = Normal function, 75% = Mild function, 50% = Moderate function, 25% = Severe function).

P

Pathology note

Is a space for making notes to the patient.

Patient Number

can be any number chosen for the patient which is different from the others. It is advised to be the patient's ID number or insurance number to avoid matching number with other patients. The number is used so the user can find the patient easier, without having to enter all his personal information.

Period

Is the number of weeks that the fetus has been in the womb.

Pma (Postmenstrual age in weeks)

Is gestational age plus chronological age.

R

Race

Is defined as "a category of humankind that shares certain distinctive physical traits." There are 4 main races: namely white/Caucasian, Mongoloid/Asian, Negroid/Black, and Australoid. This is based on a racial classification made by Carleton S. Coon in 1962.

Renal function chart:

Pat
Current patient based on inserted data

P20
A healthy version of our patient with an age corresponding to 20 years.

Opt
Optimal renal functionality for current patient. If the patient will be healthy and typical.

P(x)
A healthy version of our patient with an age corresponding to **x** years.

Std
Standard patient. The standard patient is patient from literature which is male, 55 years, 175 cm and 70 kg.

Renal function

(In nephrology) is an indication of the kidney´s condition and its role in renal physiology.

Requesting physician

Is the person who is asking for your opinion how to dose a drug and has the final word and responsibility for the dosing patient.

RF Schwartz Constant (k)

Is the default constant, defined as 0.55 (0.5–20years).

RF Schwartz Measure (Clcr)

Is equal to: ((RF Schwartz constant k)*(RF Schwartz Measure Weight)/Cr)*88,5.

Room number

Serves purely for identification purposes. It means where the patient is located and can be useful for program user who wants to visit the patient.

S

Serum creatinine

Presents the level of creatinine in the blood. It shows whether your kidneys are working properly or not.

Sex

Differs in humans from physical appearance related to either males or females.

W

Ward

Serves purely for identification purposes. It means where the patient is located and can be useful for program user who wants to visit the patient.