PrecisePK

User Manual

Version 19.04.24

Table of Contents

1.1 Welcome Screen and Menu Bar

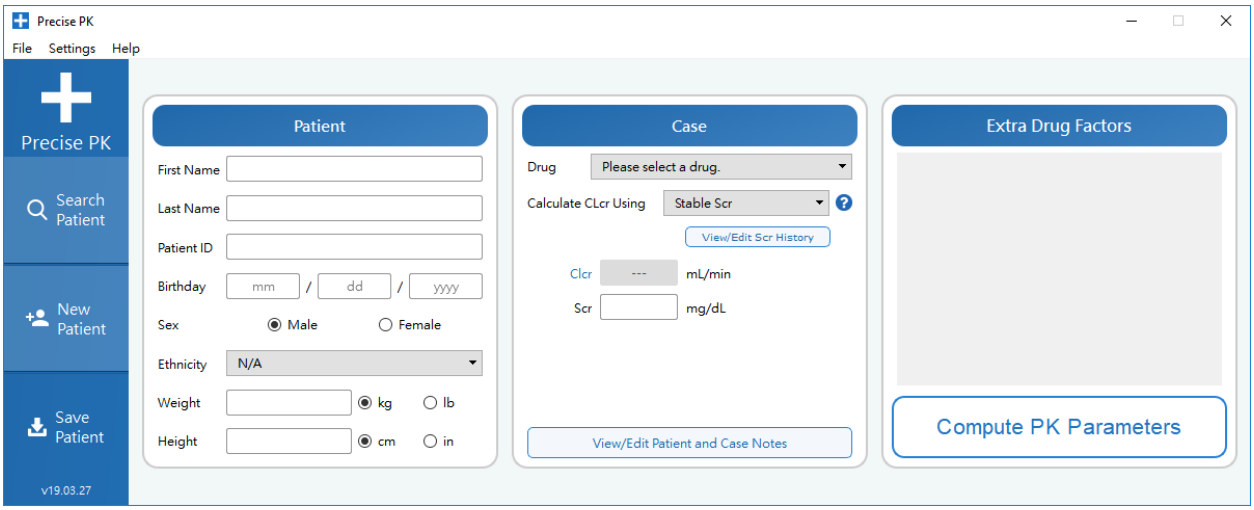


Figure 1.1.1 Welcome Screen and Menu Bar

After logging into PrecisePK, you will be led to the **Welcome Screen** (1.1.1). The top of the window on the left displays the title which displays PrecisePK. The top right of the window has the minimize and close program buttons. The bottom left indicates the version running, which in the figure above is 19.03.27.

On the left side of the Welcome Screen (under the logo), there are 3 buttons – (1) Search Patient (2) New Patient (3) Save Patient. Please note that the Save Patient and Add New Patient functions are darker blue on the Welcome Screen, as these will only work after you have entered the Patient details and computed the PK Parameters, or if you have another patient case open on the screen. Below are some brief descriptions of the 3 buttons:

Search Patient will open a new window that will allow you to search for and load patients stored in the database.

Save Patient will allow you to save a new patient into the database. This option is only available after entering the patient data and computing the PK parameters.

New Patient will lead you to the default Welcome Screen that contains the Add New Patient form.

The main feature of the Welcome Screen is the Add New Patient form. By default, the Welcome Screen will show this Add New Patient form. In previous versions, you had to click through menu options to add

a new patient, however for speed and convenience, we implemented the Add New Patient form as the default view of the Welcome Screen. So, essentially, the Welcome Screen is identical to the Add New Patient Screen. You can add the new patient details and click the Compute PK Parameters button and the program will calculate the PK parameters of that patient.

The **Menu Bar** contains various options that can lead you to almost all the pages and windows of PrecisePK. There are 3 menu options – (1) File (2) Settings (3) Help. The menu bar can be accessed any time, which allows you to have multi-calculation and/or graph windows open on the same screen. Below are some brief descriptions of the menu options:

File –

- **Export File:** Exports the patient case that is currently opened into a file (.CSV). Multiple exports to the same file will not override the exported data but will append to the existing data.
- **Import File:** Imports a file (.CSV) that contains patient data into your active database.
- **Edit History:** Opens a window that shows the create, read, and update history of all patients in the database.
- **Print Report:** Generates a printable pdf with current patient and case information that can be saved or printed out
- **Log Out:** Logs out the current user.
- **Exit:** Exits the PrecisePK program completely.

Settings –

- **Program Settings:** Opens the Program Settings Window which allows you to change the program settings in PrecisePK (the available settings may vary depending on the role permissions of the user).
- **Manage User Accounts:** Opens the User Management Window (when logged in as an administrator) or a Profile Window (when logged in as a normal user). Allows the admin to manage all the user accounts. Or allows a normal user to update all of their current information.

Help –

- **About:** Opens the PrecisePK Information Page and Privacy Policy.
- **Software Update:** Opens the Software Update Page which allows you to check and download the latest version of PrecisePK.

1.2 Patient & Case Window

When you first log in to PrecisePK, you will see the *Welcome Screen* which includes the *Patient & Case Window*. In this window, you will be able to search for, edit, store, and print information about patients and their respective cases. (1.2.1).

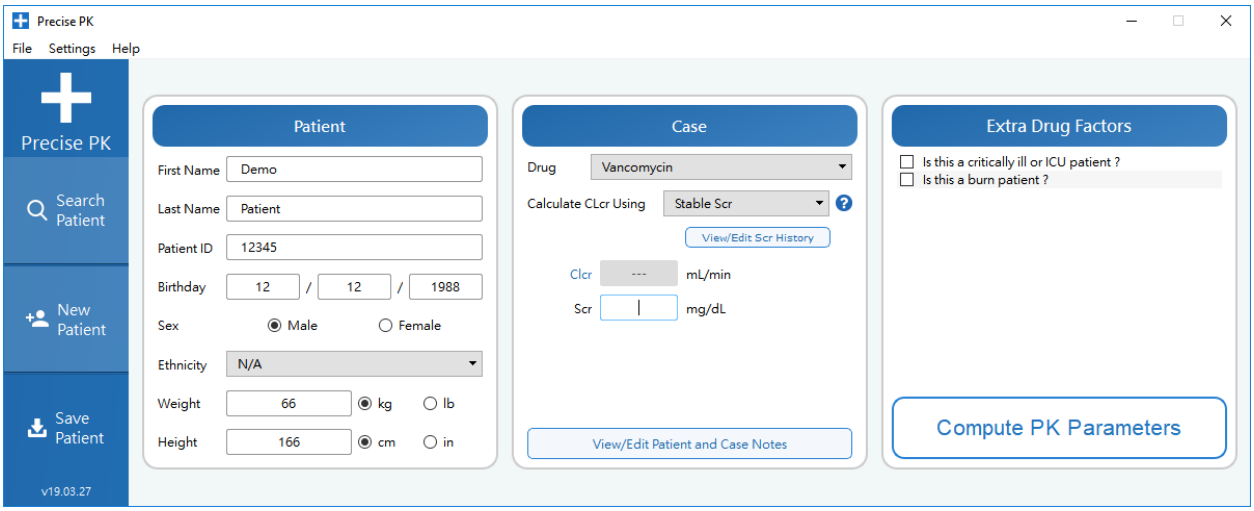


Figure 1.2.1 Patient & Case Window

To enter a new patient into your database, you must fill in all that patient's information first, including information about their case.

Under 'Patient', enter the patient's full name, ID, date of birth, gender, weight, and height. If needed, you can change the unit of measurement for the weight and height fields. Ethnicity can also optionally be added.

Under 'Case', first enter the drug name. Then select the method of calculating Clcr. Fill out the required fields (non-grayed out) such as the serum creatinine in mg/dL.

PrecisePK has four methods of calculating Clcr:
Stable Scr – Clcr is calculated from a single inputted Scr value.
Changing Scr – Enter an initial Scr value for Scr, the more recent Scr value for Scr Later, and the time between these measurements in time. Clcr will be calculated using the changing formula (note: If the time is under 24 hours, Chiou's formula will be used.

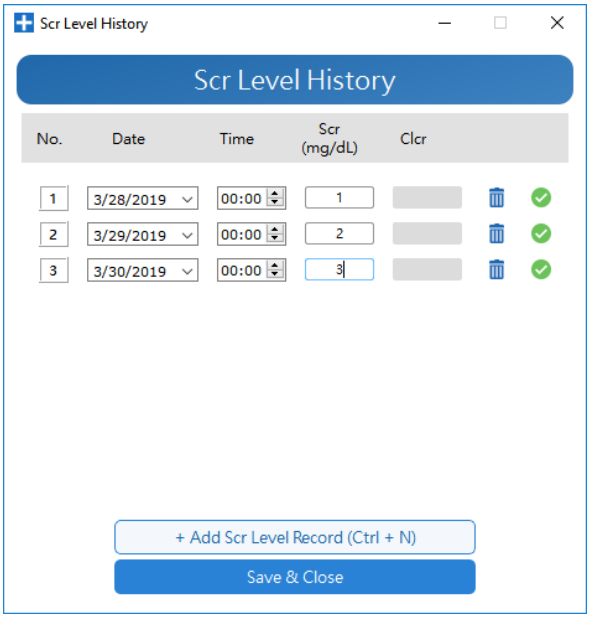


Figure 2.2.2 Scr Level History Window

Scr History – Either selecting 'Scr History' or clicking 'View/Edit Scr History' will open the above window. Fill in the Scr history of the patient and select save & close (Note: For new patients, Clcr will be calculated after clicking Compute PK Parameters in **1.2.4**. For existing, Clcr will be auto-calculated). After Save & Close, PrecisePK will calculate Clcr in one of the above ways. If only one entry exists in history, Stable Scr will be used with the single Scr entry. If more than one exists, Changing Scr will be used. The two most recent entries will be grabbed, with the earlier entry in Scr and the later entry in Scr Later. The time between the entries will be auto-calculated and used in the Time field. This Scr History can also be seen later in the Dosage Plan & History page (Section 1.5).

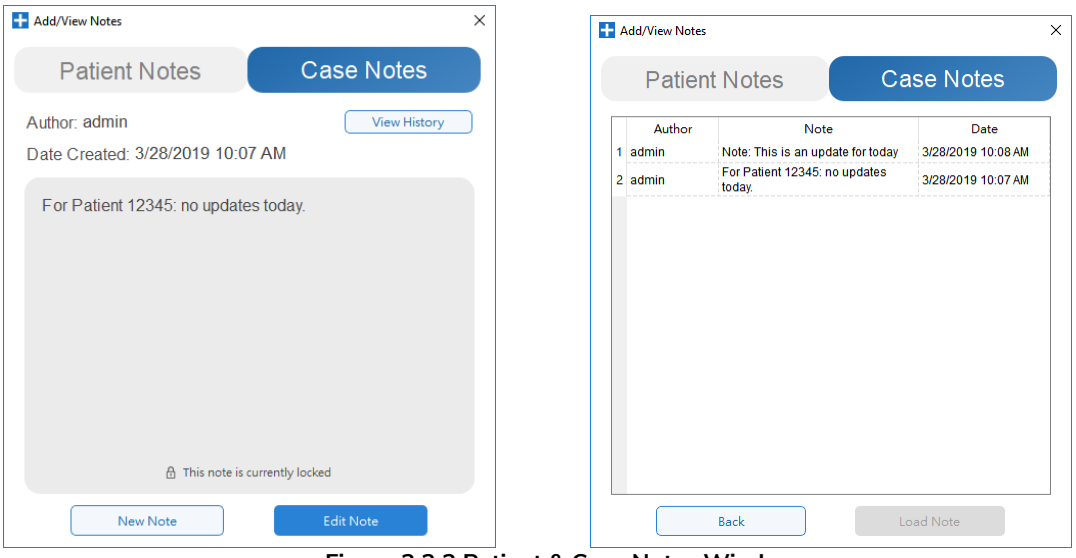


Figure 3.2.3 Patient & Case Notes Window

You may also record additional information using the 'Patient Note' and 'Case Note' fields. When opening, you will see the most recent note written about the case or patient. You can edit or create a new note. The author and creation date of the note is always logged. When editing or creating a new note, the old note will be saved into the note history (as seen on the right screen of 1.2.3). You can go back to previous notes by selecting 'View History', then double-clicking or selecting 'Load Note'.

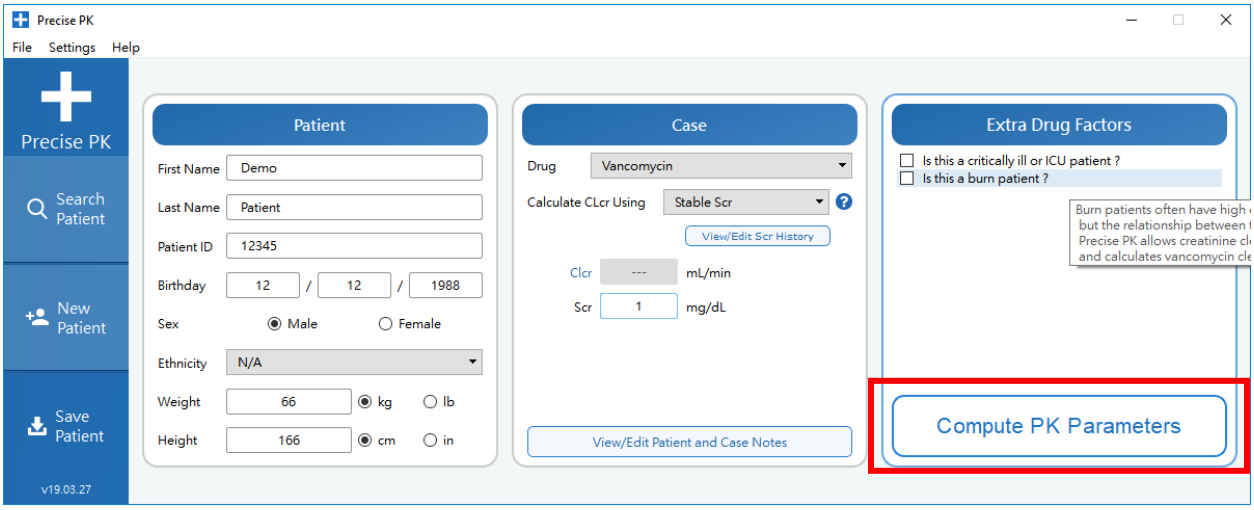


Figure 1.2.4 Extra Drug Factors & Compute PK Parameters

Lastly, select any extra drug factors that apply to the patient. Hover over each factor for more information on how these factors affect calculation. After completing the patient information, case information, and extra drug factors, you may click 'Compute PK Parameters' (1.2.4).

The window should then expand to show the calculated population PK parameters, Bayesian PK parameters, and body composition calculations (Figure 1.2.5)

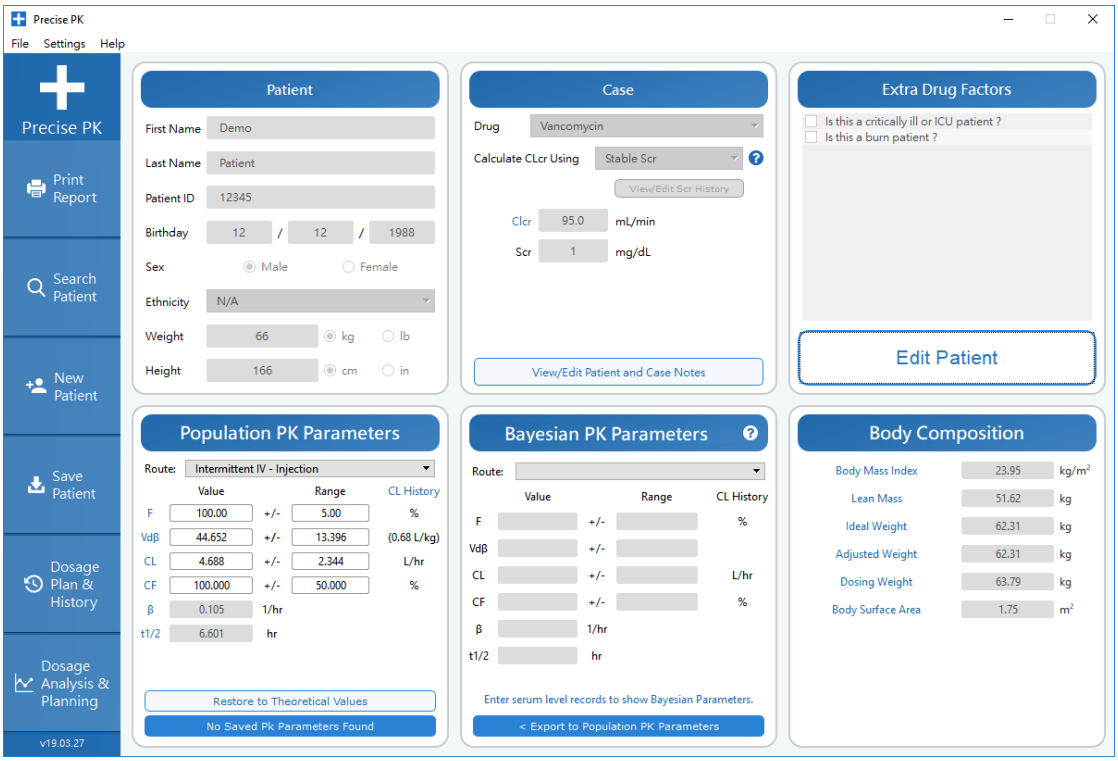


Figure 1.2.5 Expanded Patient & Case Window showing computed Patient & Case Window

NOTE: It's likely that the Bayesian values may not appear immediately. For the values to appear, the patient's dosage history must be entered into the *Dosage Plan & History* window (1.2.6).

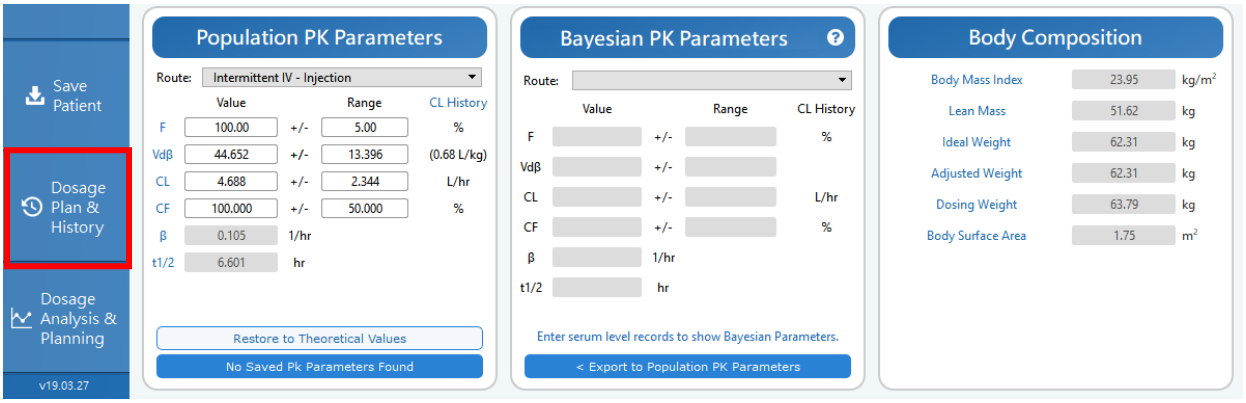


Figure 1.2.6 Location of the 'Dosage Plan & History' window

These values also change in real time based on the patient's data and their customized parameters whenever you run the graph analysis from the *Dosage Analysis and Planning* window. This information is available to read whenever you click the ❷ button next to 'Bayesian PK Parameters' (1.2.7).

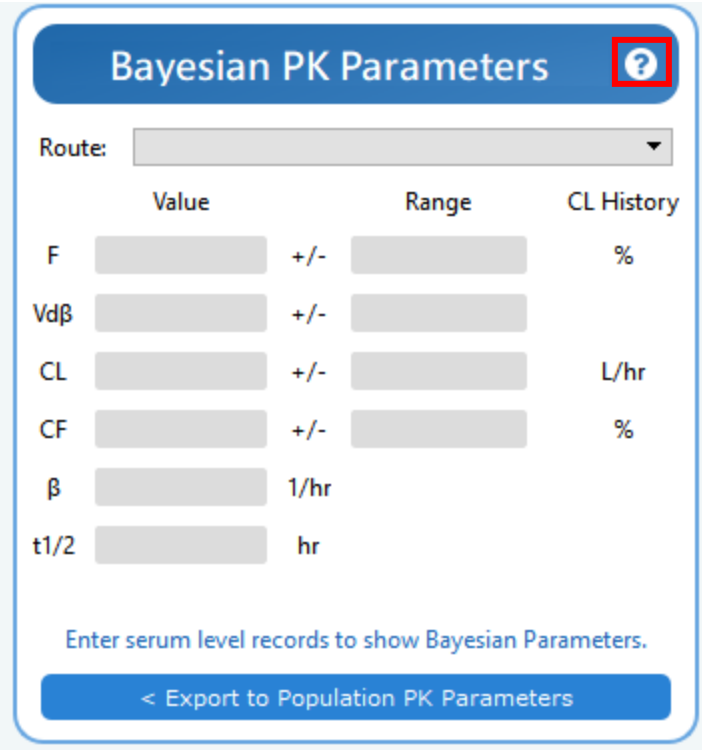


Figure 1.2.7 Additional information on Bayesian PK Parameters

Also see **1.6 Graphical Analysis & Planning** for instructions on entering dosage history and performing graphical analysis.

After reviewing the parameters, you may edit the current patient's information at any time by clicking the 'Edit Patient' button that has taken the place of the 'Compute PK Parameters' button (1.2.8).

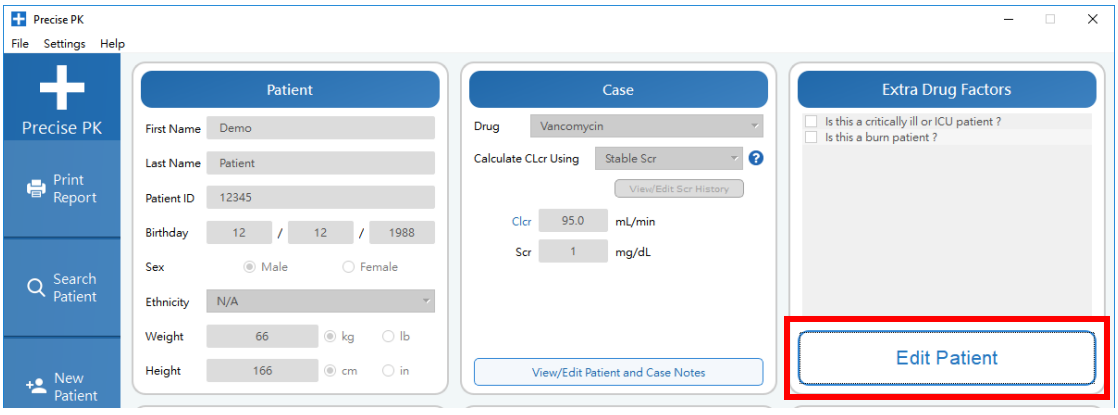


Figure 1.2.8 Edit Patient

Once you have entered all the patient's information and generated the PK parameters, you will be able to store the new patient's information into your database by clicking 'Save Patient' (1.2.9). You can also

print this patient's report by clicking print report (below the logo) For more information, see **1.7 Print Report**.

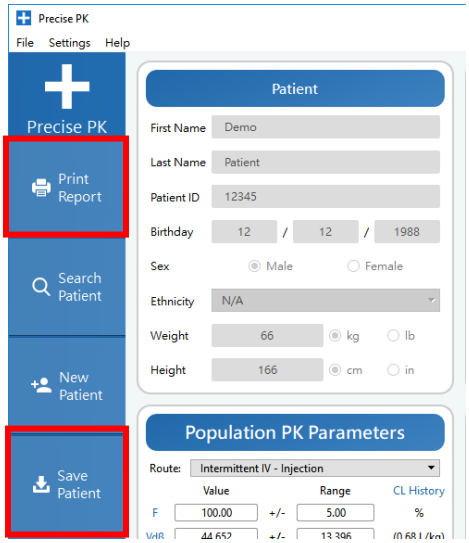


Figure 1.2.9 Save Patient and Print Report

You can locate this patient's data in the future through the 'Search Patient' option. From there, you can edit that patient's information and add additional cases. For more information, see **1.3 Load Patient & Search Result** for instructions on editing existing patients' data (1.2.9).

If you would like to enter a new patient into the database without logging out of PrecisePK, you may do so by clicking the 'New Patient' button (1.2.9). This will reset all the fields in the *Patient & Case* window. Both search and new patient will prompt you if you want to save the current patient changes before resetting.

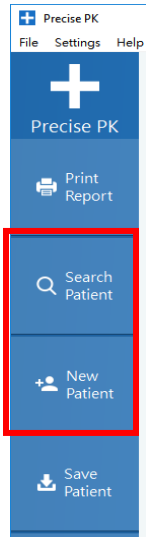


Figure 1.2.9 New Patient

1.3 Load Patient and Search Result

If you would like to locate and edit an existing patient's information, you can do so by clicking the 'Search Patient' button in the *Patient & Case* window (1.3.1).

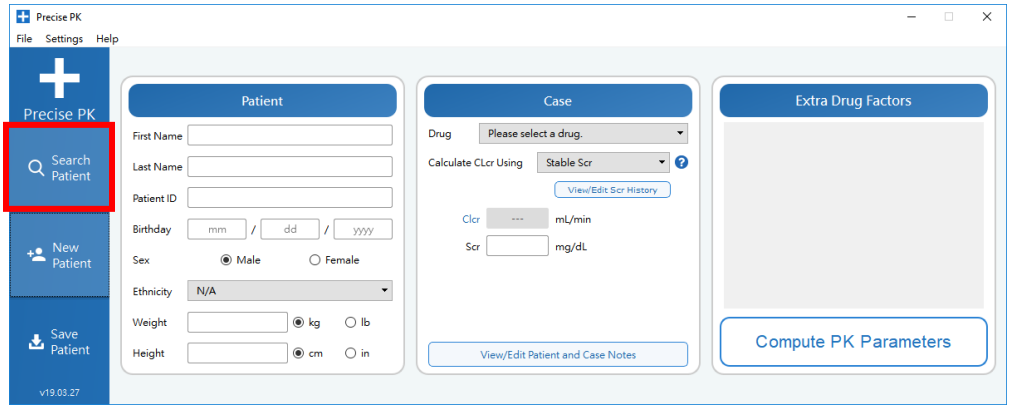


Figure 4.3.1 Patient & Case Window

Searching for a Patient

A new window will open showing you the patient database, including the total number of patients and cases. You can locate your patient by scrolling through the 'Patient List' or you can use the search fields to filter patients by their first name, last name, patient ID, or case number (1.3.2). If you use the search fields to locate your patient, they will appear in the 'Patient List' accordingly.

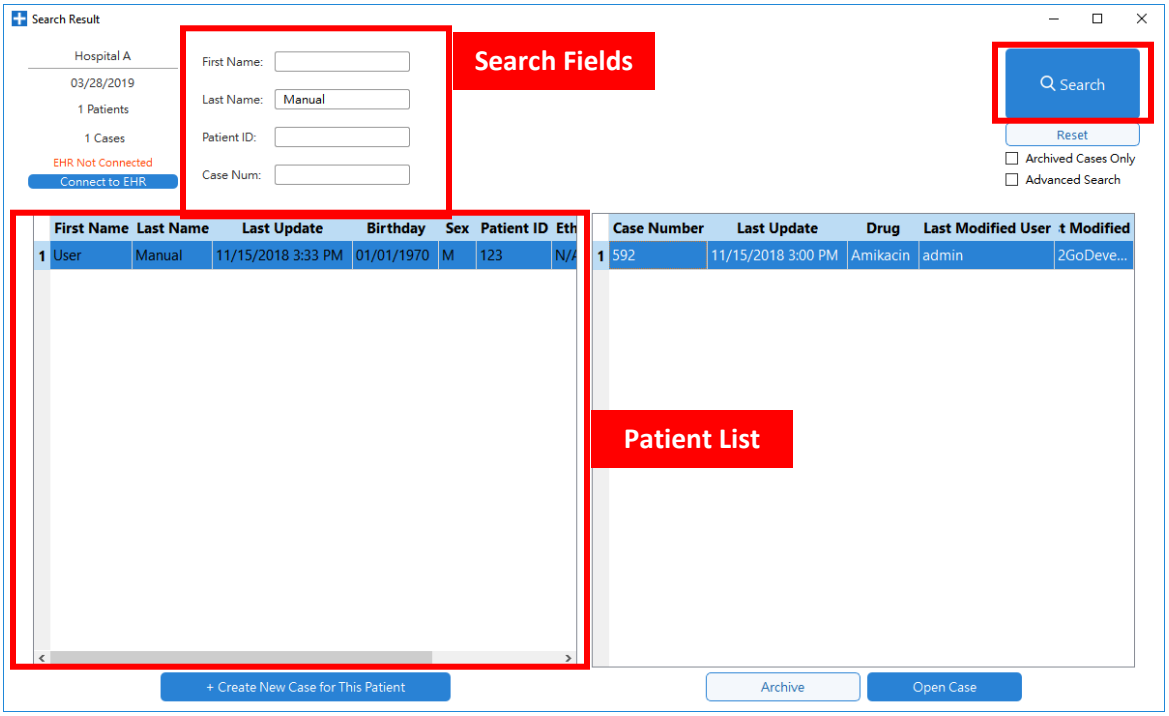


Figure 1.3.2 Search Result Window

You can also expand the search field options by checking the 'Advanced Search' box (1.3.3).

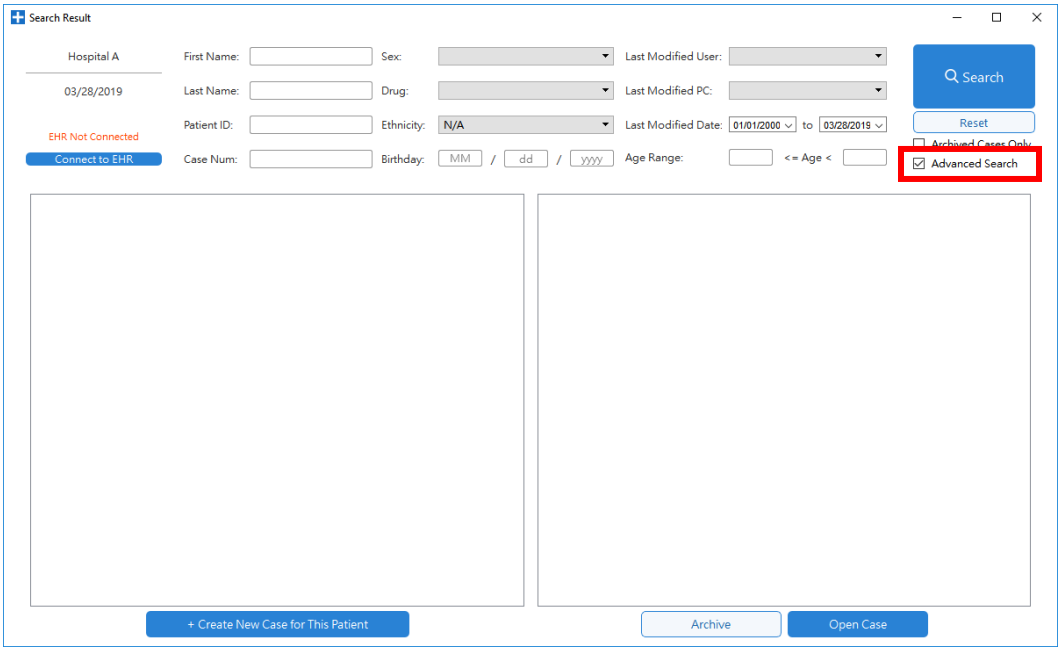


Figure 1.3.3 Expanded Search Result Window with Advanced Search filters

Once you locate your patient, you will be able to see that patient's full name, date of birth, sex, and ID at a glance. You will also be able to see when this patient's information was last updated. Ethnicity will be shown or marked N/A based on information provided.

You can view all cases associated with your patient by clicking on their information in the 'Patient List.' The patient should be highlighted and their cases should appear in the 'Case List' (1.3.4).

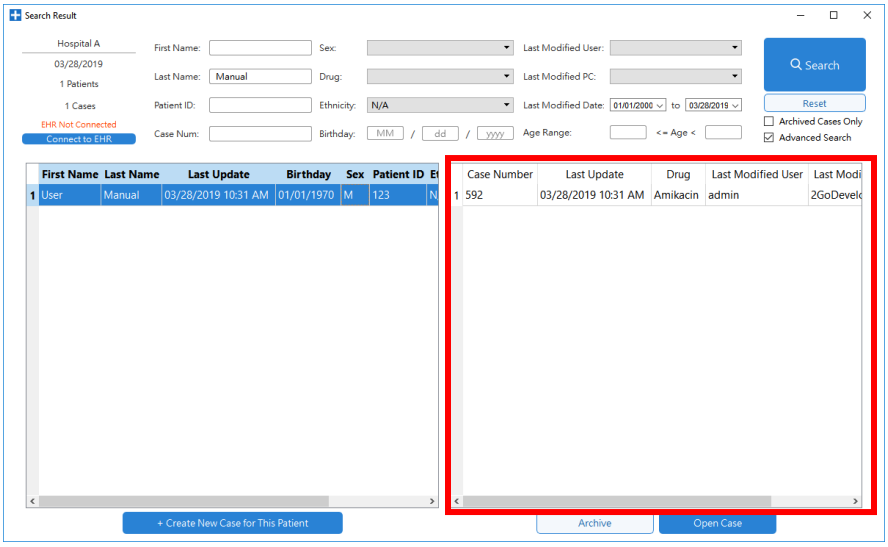


Figure 1.3.4 Search Result Window with located patient and their respective cases

Loading an Existing Patient and an Existing Case

To edit a patient's case or their personal information: 1. Find and select the patient from the patient list 2. Select the case you would like to edit in the 'Case List' 3. click 'Open' or double click the case selected (1.3.5).

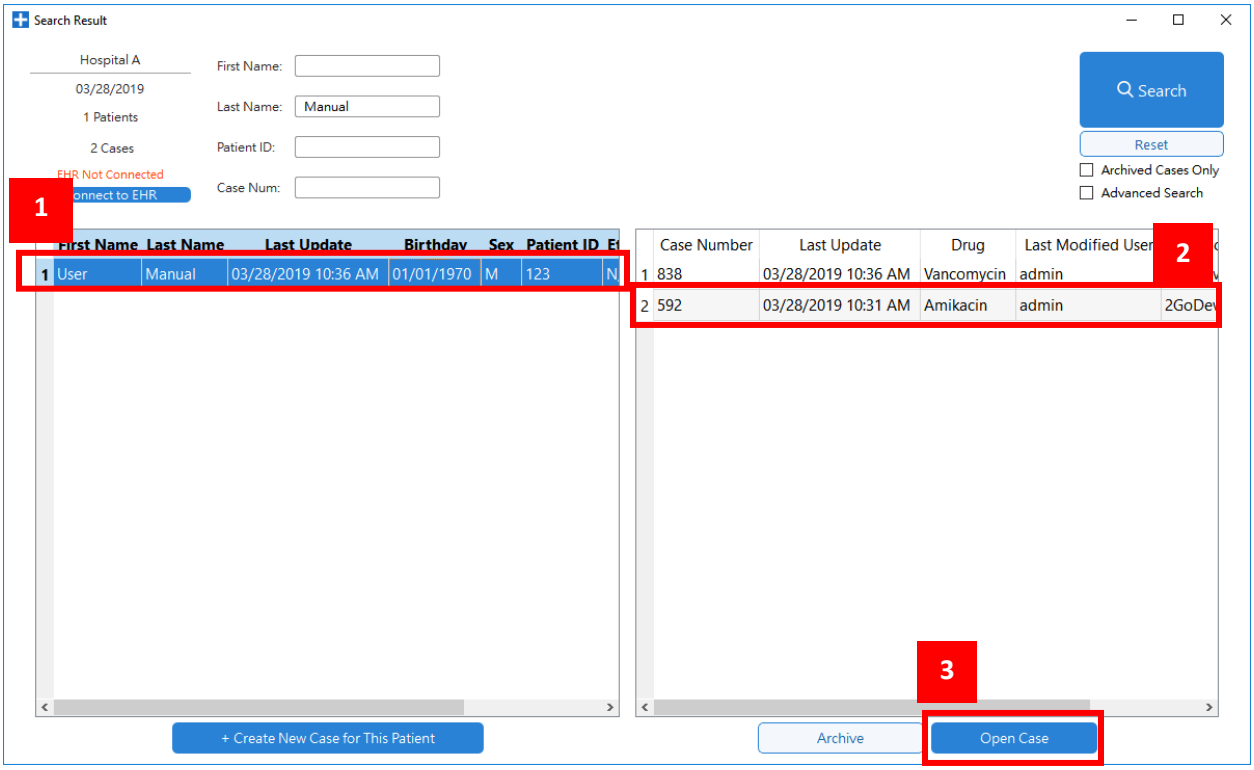


Figure 1.3.5 Selected existing patient and existing case

This will direct you back to the *Patient* & Case window, with all the patient and case information auto-filled in with the selected information. You can make any desired changes from here and it will be reflected in the Case List after saving.

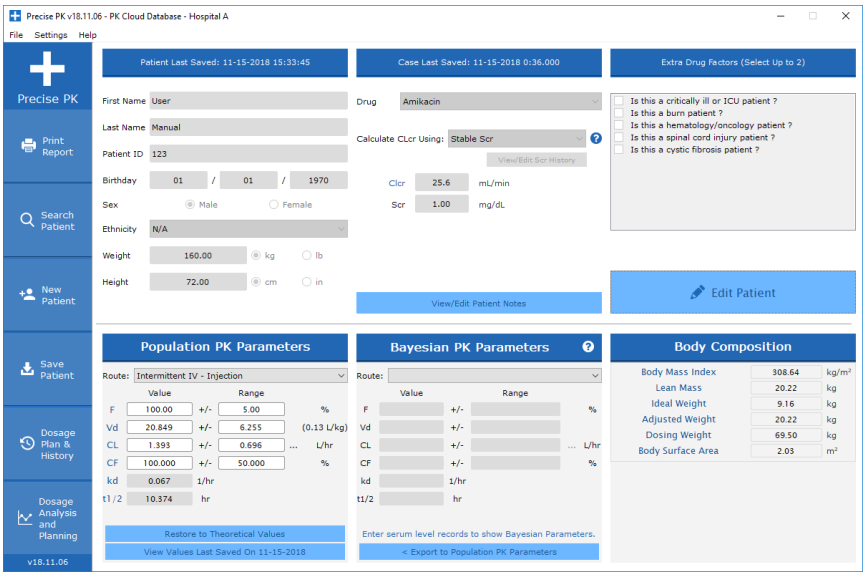


Figure 1.3.6 Patient & Case Window with existing patient and case information

If you make any changes to the patient's personal information while editing a case, aside from the patient's weight and height, the new changes will be reflected in the 'Patient List.' If you make changes to the patient's weight and height, the changes will be reflected in the 'Case List.'

Loading an Existing Patient and Creating a New Case

To make a new case under an existing patient, select the patient from the 'Patient List' and click 'create new case for this patient'. Double clicking the selected patient also works for creating a new case. Do NOT select an existing case in the 'Case List.' (1.3.7).

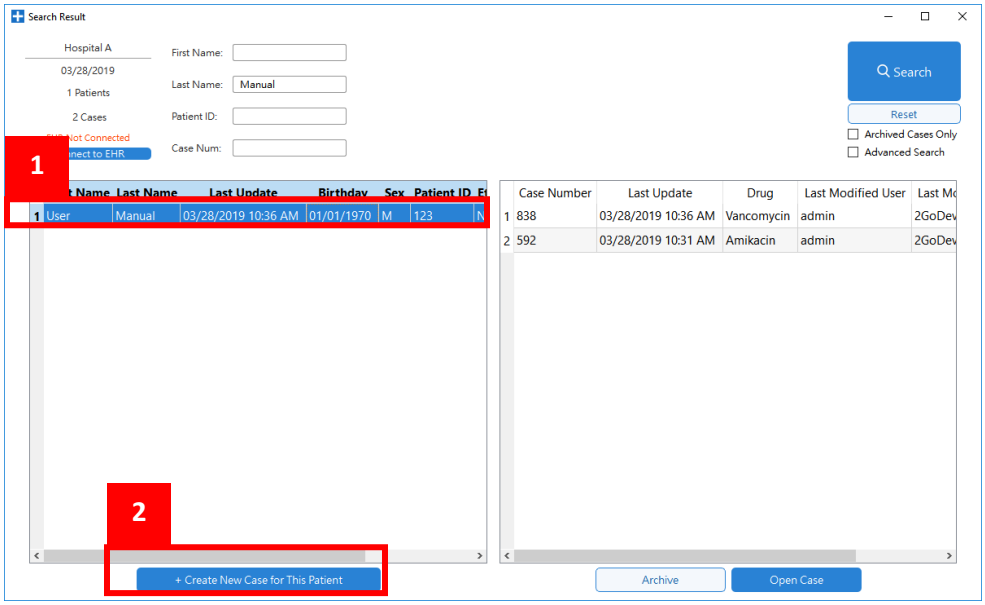


Figure 1.3.7 Loading existing patient to create a new case

This will direct you back to the Patient & Case window, with only the patient's information prefilled except for the weight and height (1.3.8). Add in the patient's weight, height, and drug information. To save this information, click 'Compute PK Parameters' and 'Save Patient.' This will save as a new case that is viewable from the 'Case List.'

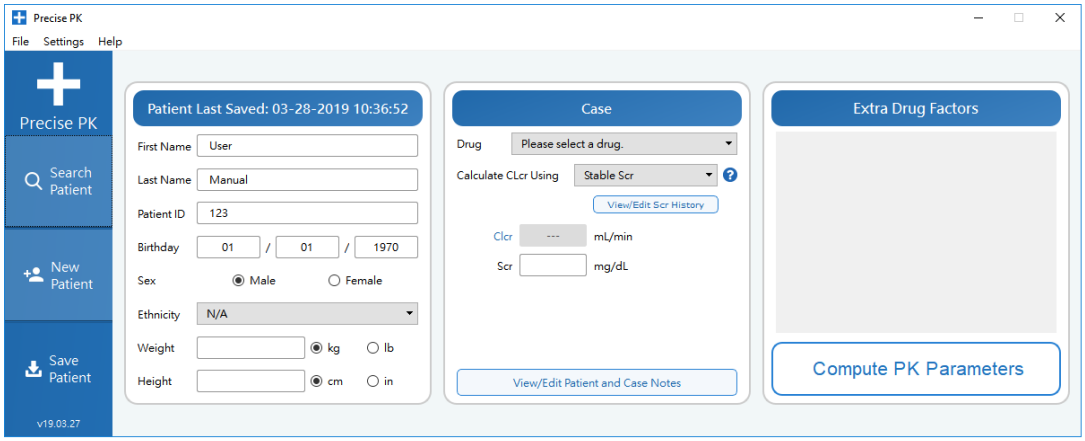


Figure 1.3.8 Patient & Case Window with existing patient's information prefilled, but empty case fields

Archiving an Existing Patient Case and Finding Archived Cases

To archive a patient's case, 1. Find and select patient from 'Patient List' 2. Find and select case to archive from 'Case List' (do NOT double click as this will open the case) 3. Click Archive case. (1.3.9) A prompt will ask to make sure you want to archive the case. Selecting yes will archive the case.

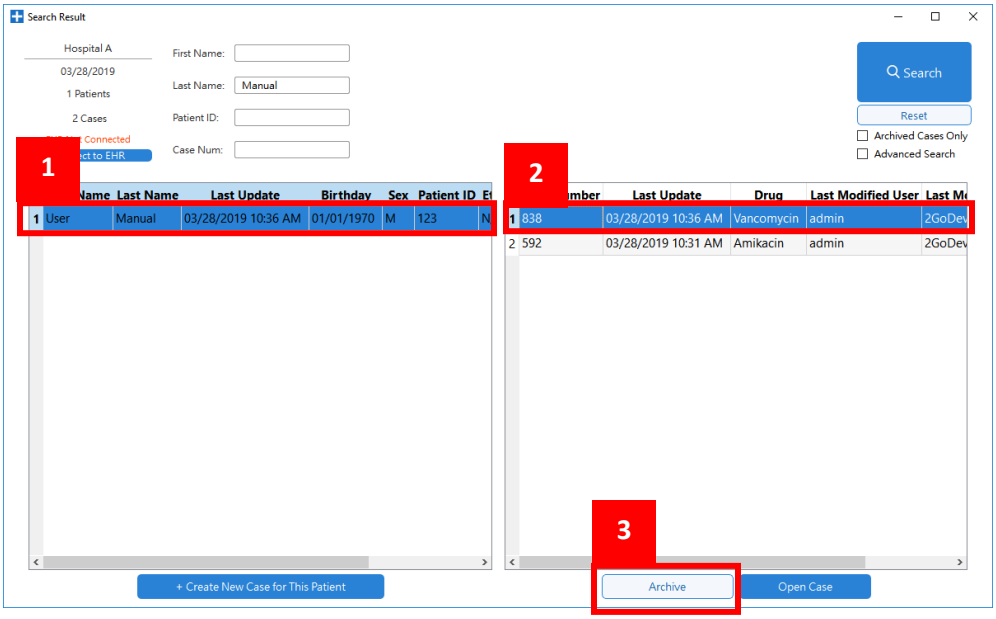


Figure 1.3.9 Steps to Archive a case

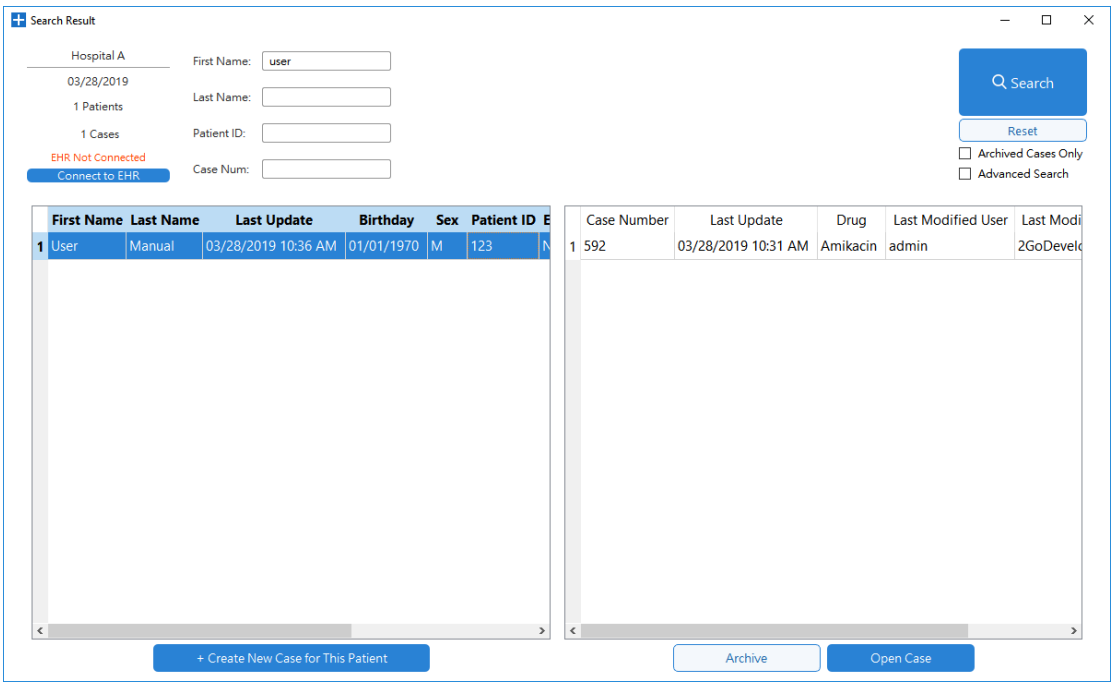


Figure 1.3.10 Case 601 gone from above patient

After archiving, that selected case will gone from the patient (1.3.10). To search up archived cases, check the 'Archived Cases Only' box. In figure 1.3.11, case 601 that was previously archived is searched up using the Patient's first name. If you would like to unarchive this case, just select the case to be unarchived and then click the 'unarchive' button that has taken the place of the 'archive' button

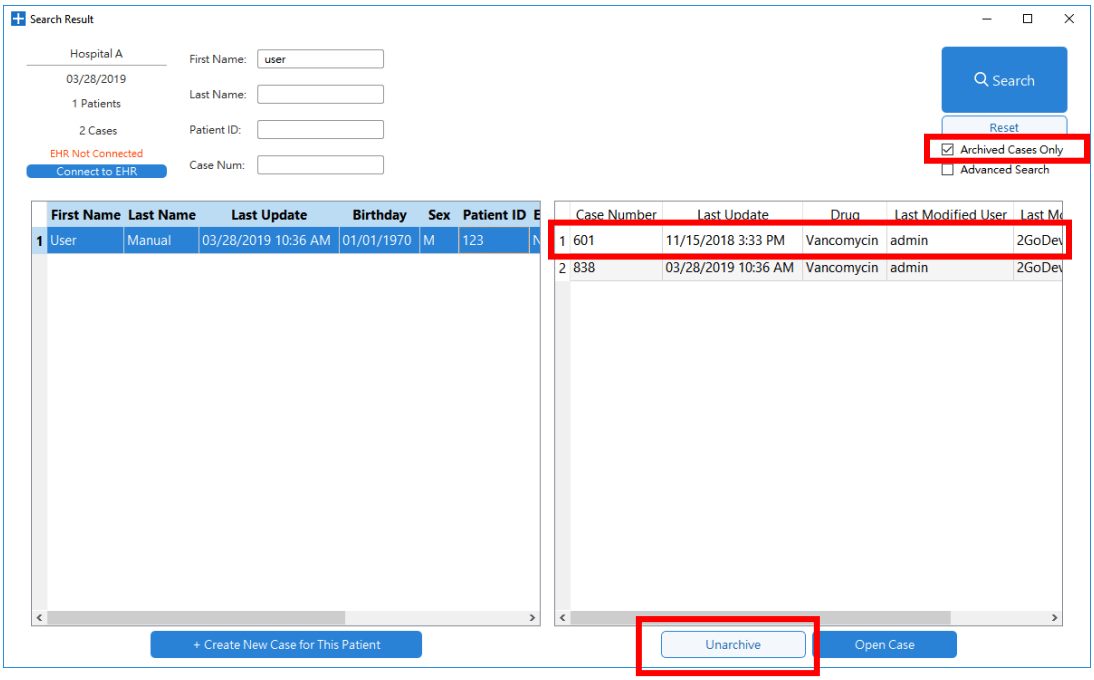


Figure 1.3.11 Searching with archived cases only selected, found previously archived case with unarchive button shown

1.4 Main Window

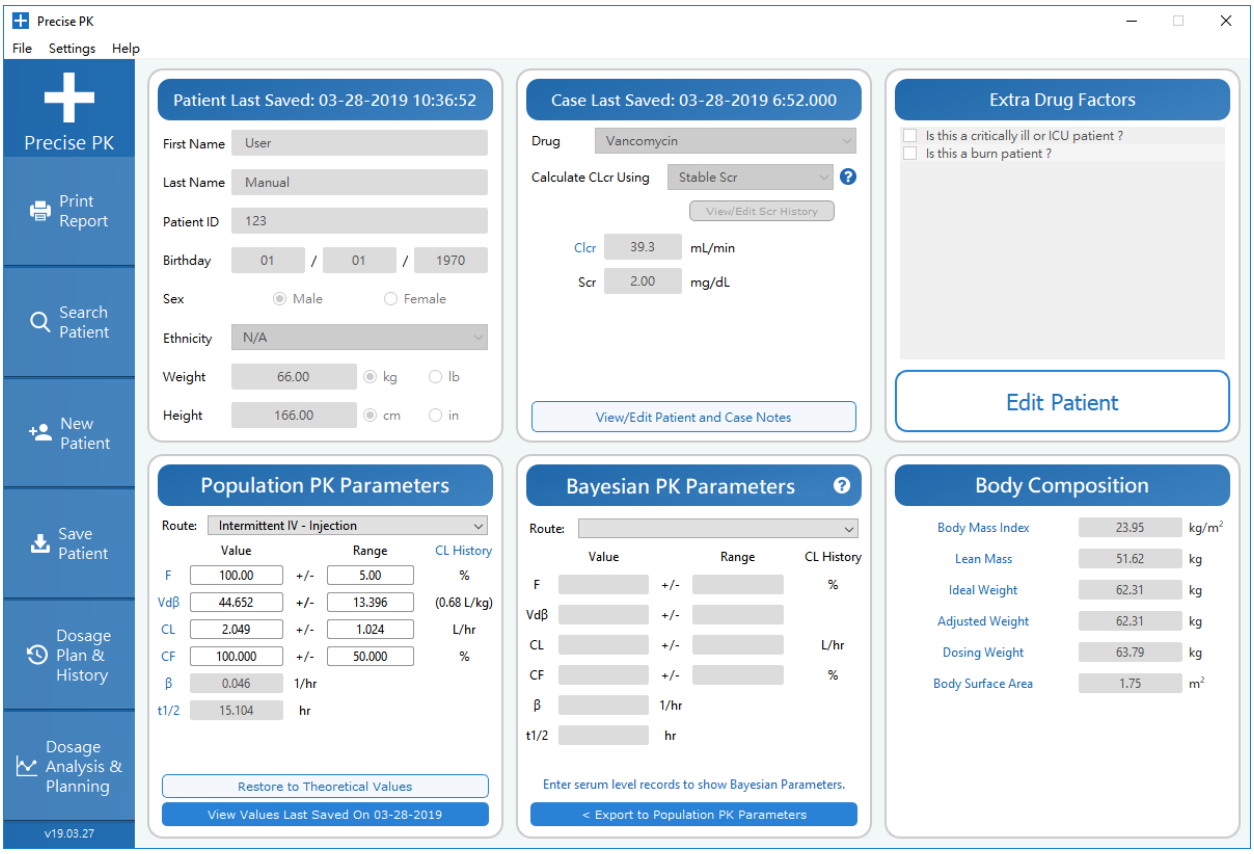


Figure 1.4.1 Main Window

After clicking the Compute PK Parameters button, you will be taken to the **Main Window** (1.4.1), which can be considered the "central panel" of PrecisePK. The Main Window contains rich information related to the patient and case. Additionally, bottom half of the Main Window displays all PK parameters and additional patient calculations. You can then navigate to different windows of PrecisePK through the Main Window (other sections of the User Manual go into detail about each window).

The Main Window can be separated by 2 main areas:

On the top half of the Main Window, you will see the current patient info. Next to the patient info, there are 3 buttons – (1) Print Report (2) Search Patient (3) New Patient. This is different than what you see on the welcome screen, Print report is enabled moving save patient down and all buttons on the left are now clickable. To edit the patient info, you can click on the 'Edit Patient button'.

On the bottom half of the Main Window, you will see the different Parameters (Population, Customized, and Bayesian) for the current patient. Next to the parameters, there are 3 buttons – (1) Save Patient (2) Dosage Plan and History (3) Dosage Analysis and Planning. On the very bottom of the window is the Restore to Values Last Saved button, which will restore the values of the parameters to the last saved values (if they were changed). By default, if no customized PK parameters are set for the patient, then the Custom PK Parameter values will be the same as the Population PK Parameter values.

You will notice that some of the calculated parameters, Clcr, and body composition have blue text. You can click on the text to pull up the citation page for the selected parameter. The citation page includes the formula(s) used to calculate and the source(s) for the calculation. If applicable, any modifying factors that were applied to the calculation would show up also (1.4.2)

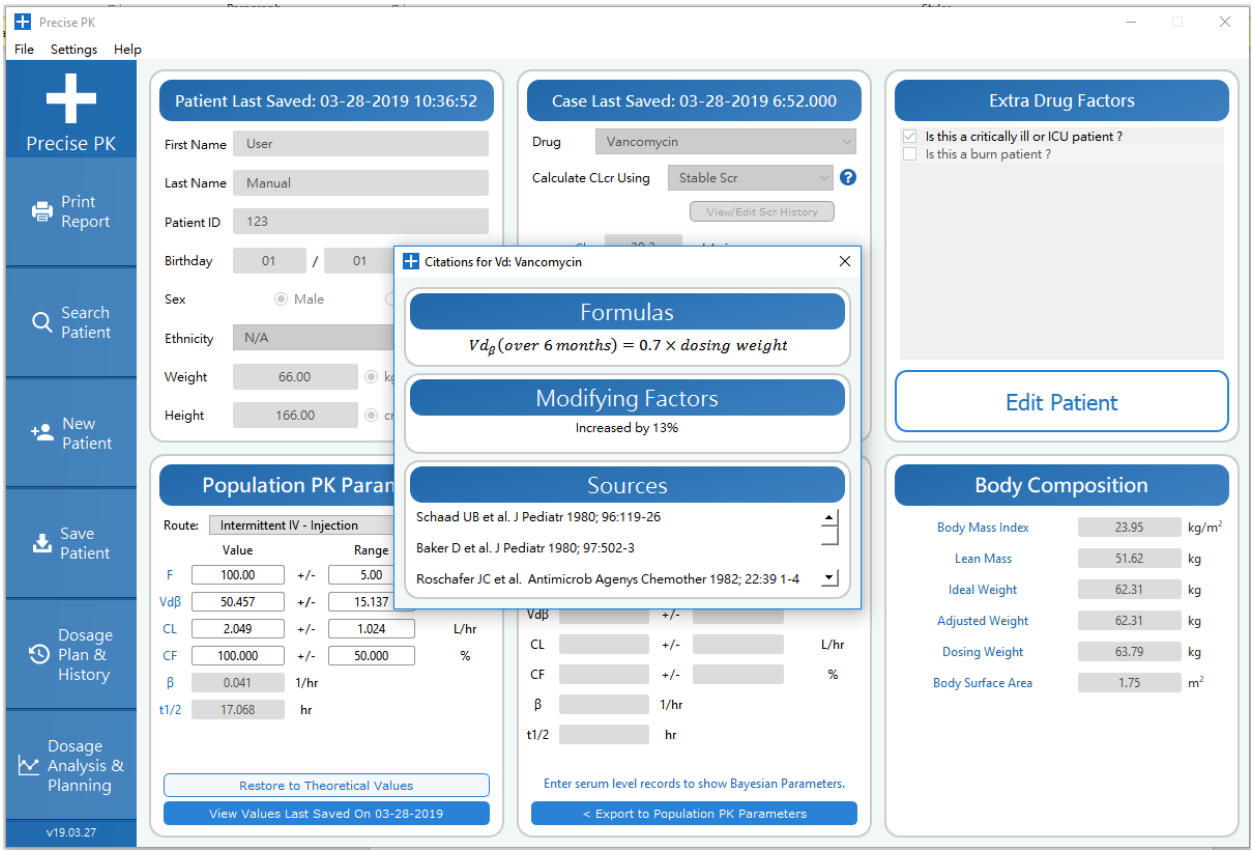


Figure 1.4.1 Citation Window for Vd. Modifying factor applied by selecting critically ill patient in extra drug factors

1.5 Dosage Plan & History

Dosage Plan & History

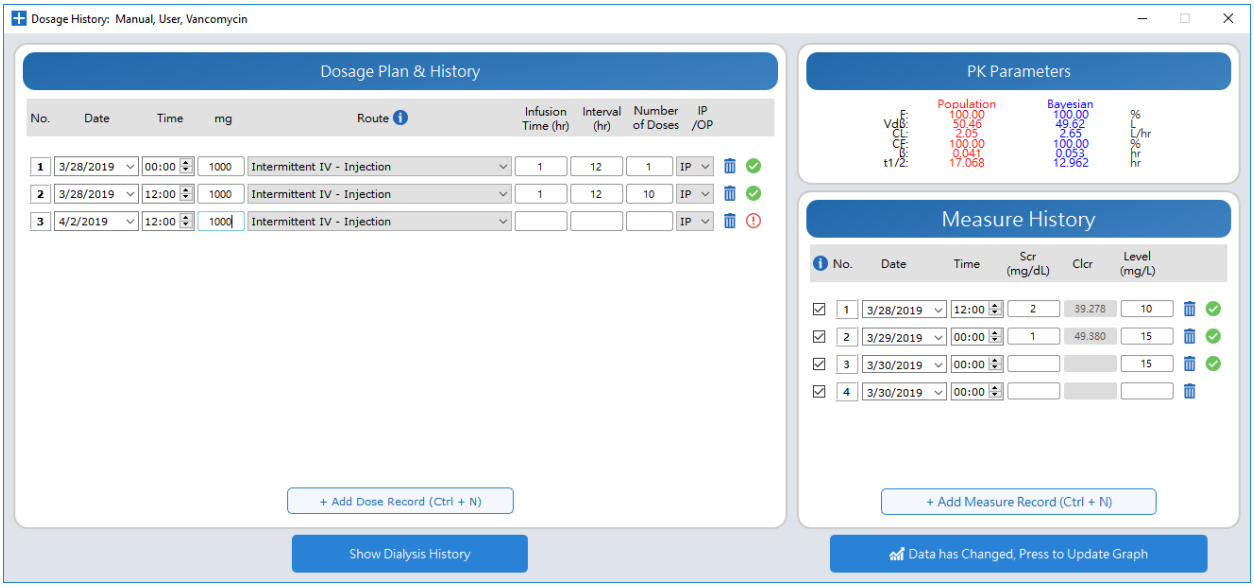


Figure 1.5.1 Dosage History Window

The Dosage History Window (Figure 1.5.1) is accessible from the main window by clicking 'Dosage Plan and Analysis'. It allows you to enter the dosage history and serum level history for the current patient case.

The Dosage History Window is where you can enter all the necessary information for the selected route. The route can be selected via the drop-down menu. For the Intermittent IV – Injection route, you will need to enter in all the information for the dose (date, time, dose, infusion time, interval, number of doses). If the row is completed, a green check sign will appear on the far right. If the completed row shows some strange behavior, a red warning sign will appear instead. The red warning sign indicates that there might be something wrong or the row is not completed – however, the program can still do the calculation (i.e., in row 2 above, number of doses was not entered so the warning sign appears next to that row). There is a trash symbol at the end of each row that is a delete button. If you click on the Delete Button, it will remove the dose record from the patient.

Dialysis History

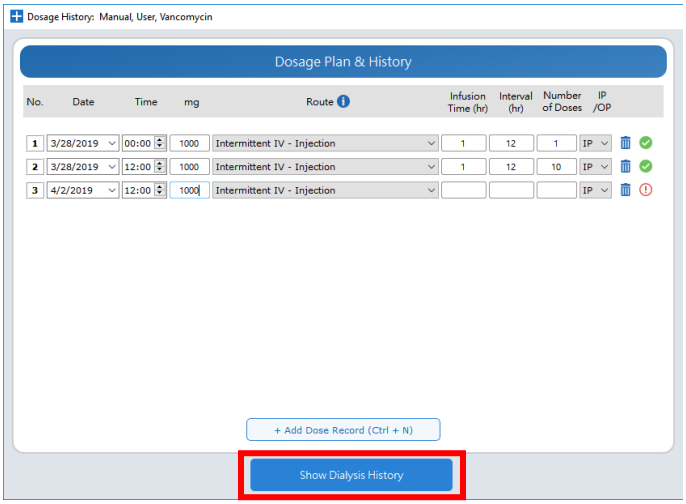


Figure 1.5.2 Dialysis Section

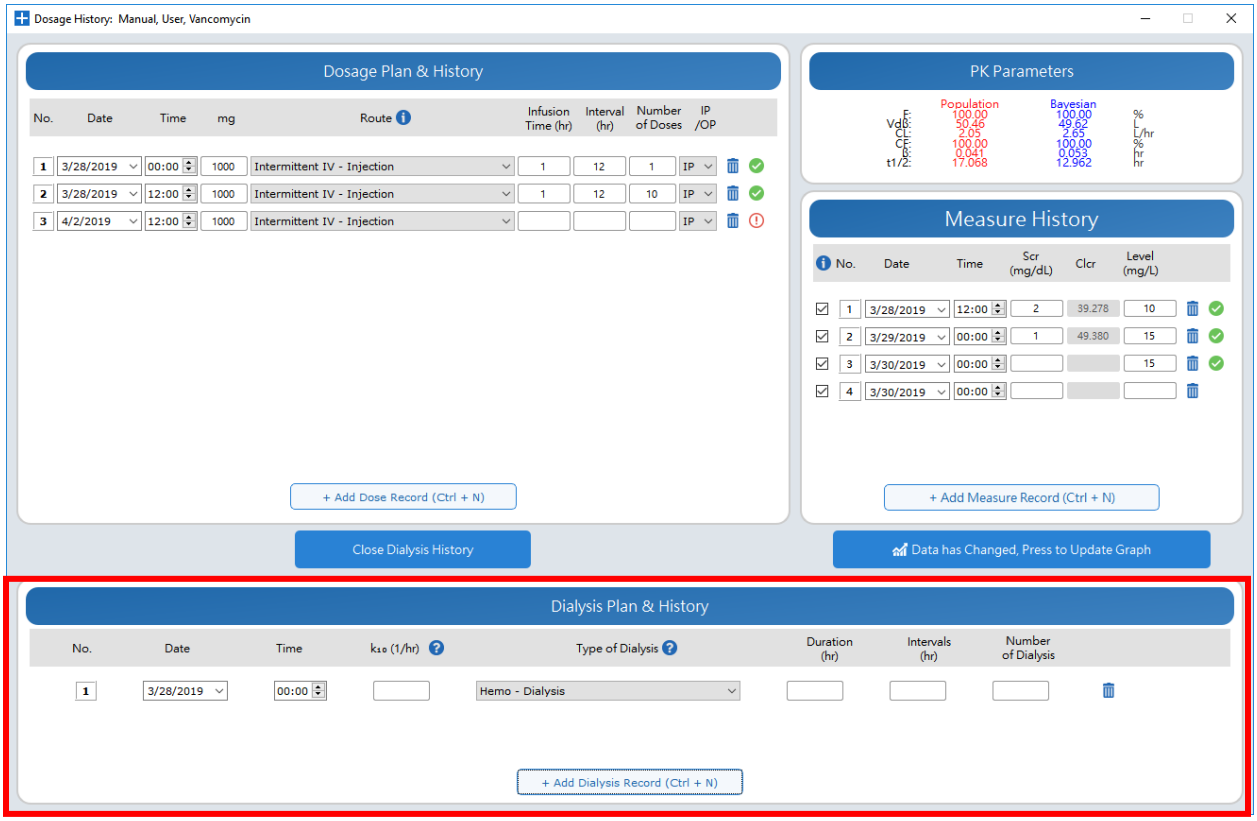


Figure 1.5.3 Dialysis History

If the patient has any dialysis records, you can click the 'Open Dialysis History' button (1.5.2) to open up the dialysis plan & history records. This section functions similarly to dosage plan & history. Enter all information into the record (date, time, elimination rate of dialysis machine, type, duration, interval, and number of dialysis). When the row is finished it will display a green checkmark, else there will be a red error. The trash symbol/delete button can be used if you want to delete this record from the patient. To close the dialysis plan & history section, click the 'Close Dialysis History' that has taken the place of the 'Open Dialysis History' button.

Measure History

In Measure History, you can add measure records for the patient. This is the same measure history that is on the main screen under 'View/Edit Scr History'. A green check will appear next to the row if it is complete, and a red warning sign will appear if the row is complete but shows some strange behavior (i.e., if the level is measured during an infusion). When entering Scr for the patient, Clcr will be auto-calculated. If it is the first entry, the stable scr formula will be used. For entries after the first, a changing formula will be used, taking in the previous entry and the time between entries. A row is complete either when at least scr or level is filled out. When changing the date and time of a record, the rows will auto-sort themselves in chronological order. The trash symbol acts similarly to the Dosage plan, deleting the record. Instead of deleting an entry, you can use the check boxes on the far left of each measure record to select which levels are used during the fitting process(1.5.2).

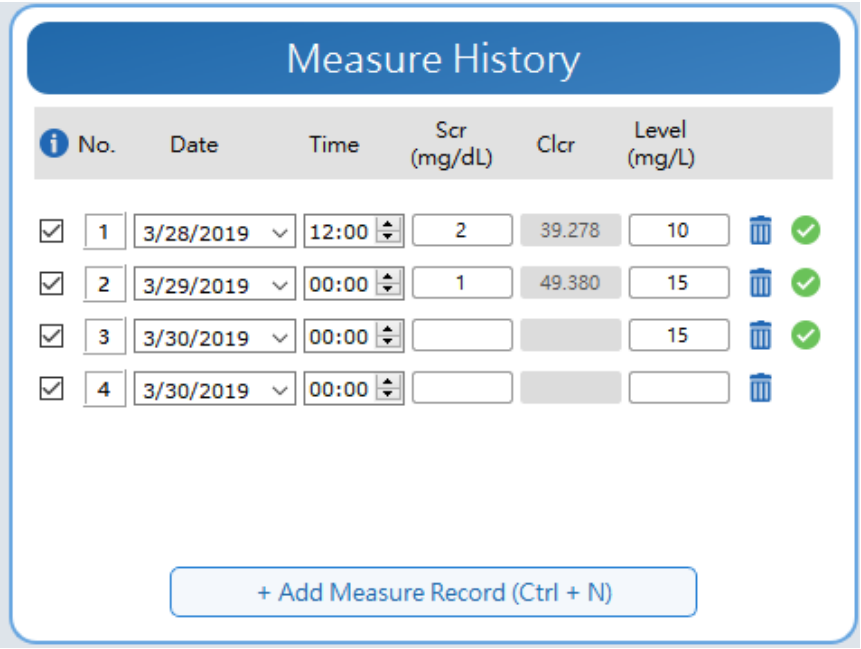
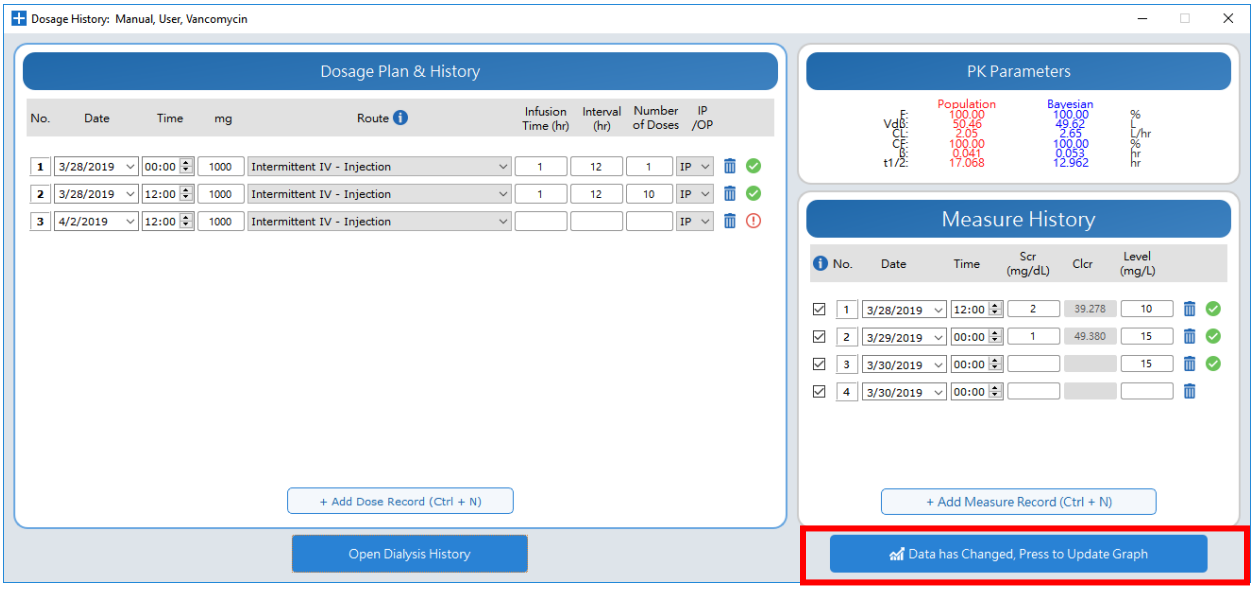


Figure 1.5.4 Measure History, showing how each row can be filled and not including the first measure record in graphing analysis

PK Parameters

The patient's population (and Bayesian if applicable) PK parameters are displayed on the top right of this screen. If any changes need to be made, close the dosage history window and go back to the main screen to edit information.

Click the 'Data has changed, Press to Update Graph button' (1.5.5) once enough records for the patient have been filled. Any time you make changes in this window, this button needs to be clicked for the changes to reflect on the graph. The button will lead you to 'Graphical Analysis and Planning' (Chapter 1.6). If no changes have been made since last press, this button will say 'Graph Updated'. Even when you make changes to patient information on the main screen, you must click either this 'Update Graph' button or 'Dosage Analysis and Planning' button on main screen for the changes to reflect.



1.5.5 Update Graph Button

1.6 Graphical Analysis & Planning

Dosage Analysis and planning consists of two sections, graphical analysis and dosage regimen/serum level forecasting. This section will focus on graphical analysis to the right (Figure 1.6.1)

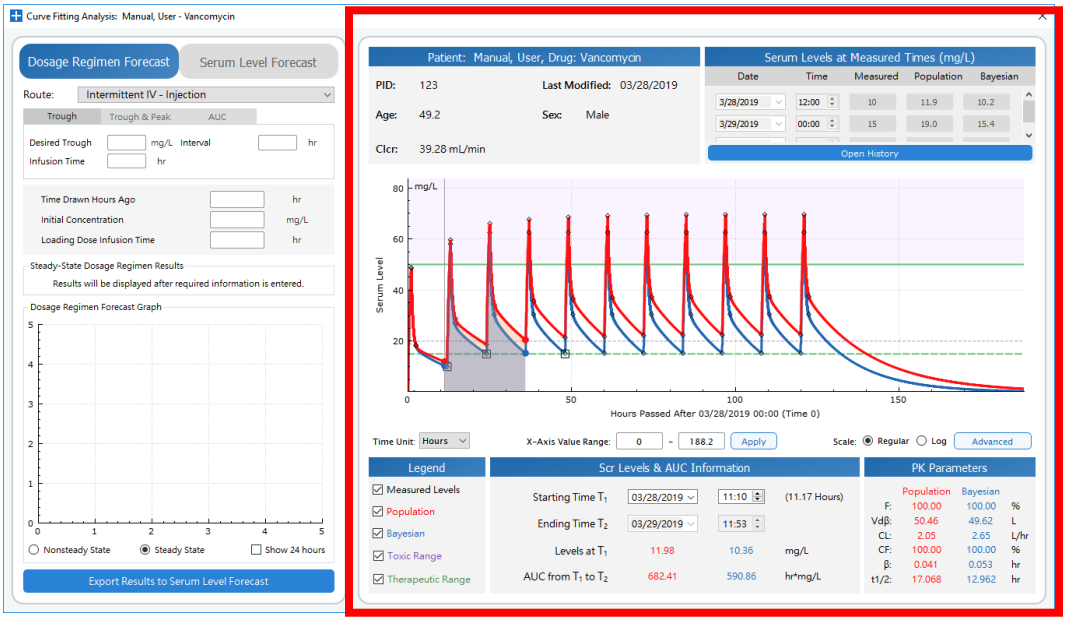


Figure 1.6.1 Dosage Analysis and Planning, Graphical Analysis Highlighted

The Graphical Analysis Window (Figure 1.6.1 Highlighted section) will display the curve fitting result. This page can be accessed from either clicking 'Update Graph' in Dosage Plan & History or the 'Dosage Analysis and Planning' button on the main window. The population (and Bayesian if applicable) curve(s) will only show if patient records are entered into dosage planning. The entered levels are displayed as small rectangles on the graph. Each set of PK is represented by its own color. The x-axis displays time while y-axis displays the serum levels.

The very top of the window displays the patient's full name and drug selected. Just below displays addition patient information such as PID, age, current date, sex, and Clcr (calculated from the main page). To the right of this section is Serum Levels at Measured times, which shows the measured level at the date and time you inputted into Dosage Plan & History. For comparison purposes, the population and Bayesian levels at the same date and time are also displayed. You can select 'Open Dosage Plan & History' to go back to the dosage planning window if you want to add more patient records or measured levels.

For AUC information, you can click and drag to a certain time to read the AUC levels at that time frame. In 1.6.2, the graph was clicked at starting time 11:10 and dragged to 11:53 the next day, a time span of

about 24 hours. Then the AUC information is displayed below in 'Scr Levels & AUC Information', represented by the curve's color.

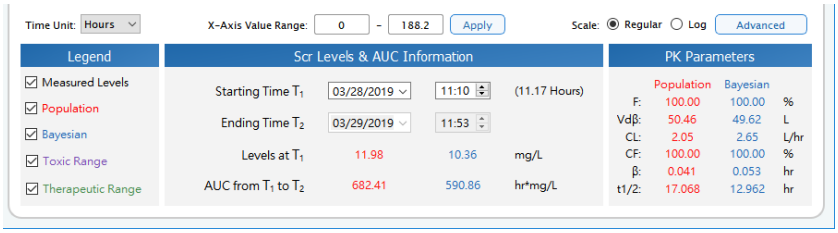


Figure 1.6.2 Bottom of Graphical Analysis

The bottom half of graphical analysis (1.6.2) contains tools to manipulate the graph. Time units (the x-axis of the graph) can be chosen between hours, days, and weeks. The X-Axis value range decreases or increases the time range of the graph. Scale allows you to switch between regular and log scale.

Legend shows what each line/color combo on the graph means. You can uncheck any individual item to hide on the graph. PK parameters are displayed similar to the main window and dosage planning section.

Scr Levels & AUC Information displays information for when you interact with the graph. Starting time indicates when you click on the graph. It shows the exact time selected and the population (and bayesian if applicable) levels at the selected time. Ending time indicates the time if you have clicked and dragged on the graph to measure AUC. AUC measurement information for population (and bayesian if applicable) between the two times is displayed in this window.

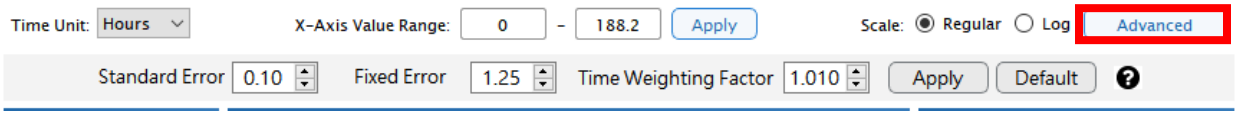


Figure 1.6.3 Advanced Options

When selecting 'Advanced', some additional options appear. Standard error is the coefficient of variation of the array error, set to 0.1 by default. Least Squares Fit can be used by setting the standard error value to 0.01. Fixed error is the error due to unaccounted variability in the model. Finally, time weighting factor is the factor by which the curve fitting calculations reduce the weight of the older measured levels.

There are additional ways to manipulate the graph by simulating and targeting dosages in **1.7 Serum Level Forecast & Dosage Regime** (Figure 1.6.1 un-highlighted section).

1.7 Serum Level Forecast & Dosage Regimen Forecast

Serum Level Forecast

Figure 1.7.1 Dosage Analysis and Planning, Serum Level Forecast Highlighted

The Serum Level Forecast Window (Figure 1.7.1) allows you to predict the serum drug concentrations achieved by the dosage regimen entered. The results are calculated using all three types of pharmacokinetic values, if available (Population, Customized, and Bayesian). When you modify the Custom PK Parameters in the Main Window, the corresponding values will also change automatically.

You can select the route and specific drug product from the drop-down menu on the top of the Serum Level Forecast Window. The different routes you select will have their own unique interface for entering the dosage regimen.

For intermittent administration, enter the dosage regimen you want a forecast for and the steady-state serum levels (predicted by this regimen) will be displayed. For administration by continuous infusion, simply enter the desired serum and the program will automatically calculate the infusion rate needed to achieve this concentration. For anti-microbial agents, enter the minimum inhibitory concentration (MIC) of the organism to calculate pharmacodynamic values (Post/MIC, Time Above MIC and AUIC) at steady-state, which are displayed at the bottom of the second column.

The window below shows the graph that is generated after entering the dosage regimen. The graph will start at a blood level concentration of 0 and will predict how this dosage regimen will reach the steady-state serum levels.

Under the graph, you can select whether to display steady state (default) or non-steady state and whether to view in a 24 hour interval. If you would like to see on the graph how this dosage regime would affect their patient, simply choose a time and date below the 'Simulate Dose button' and click simulate (1.7.2).

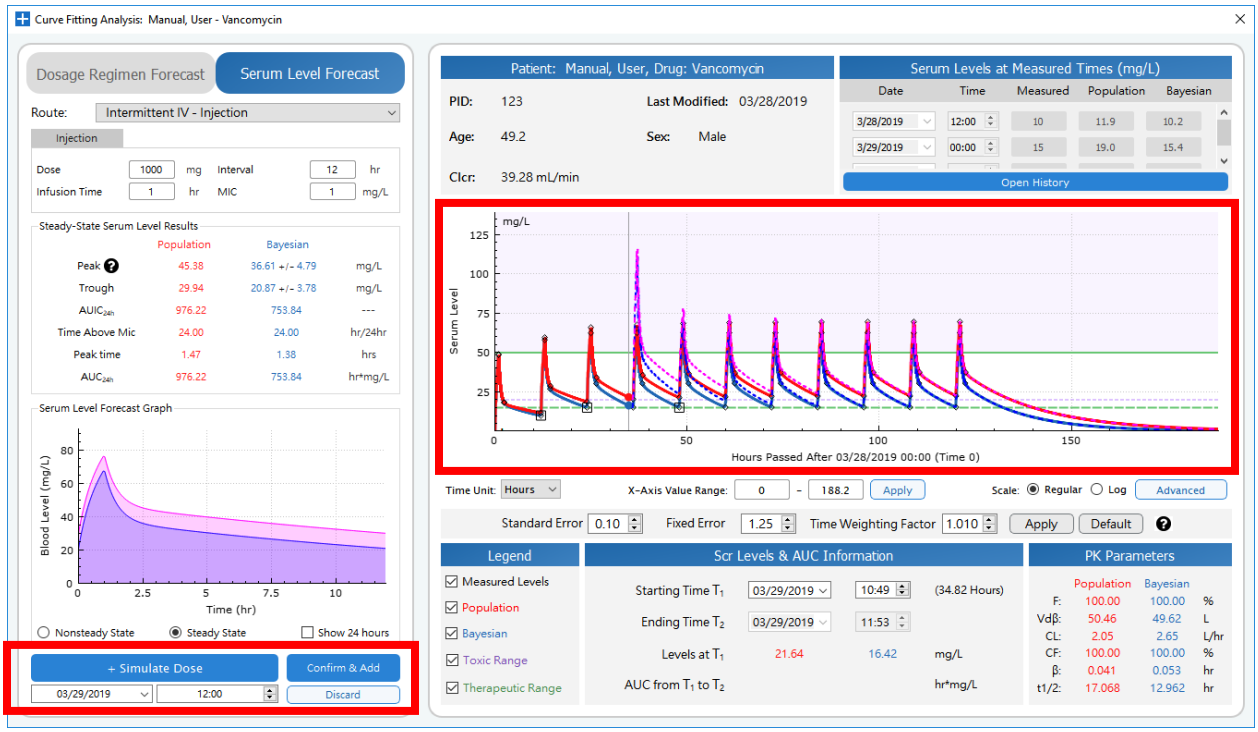


Figure 1.7.2 Simulating a Dose with Serum Level Forecast

The dosage regime will be simulated on the graph to the right at the chosen time. Dotted red represents the simulated population curve results while dotted blue represents the simulated Bayesian curve results. If you are satisfied with the results of the simulation, clicking 'Confirm and Add' will add this dosage regime to the patient's Dosage Plan and History and replace the old population (and Bayesian if applicable) curve(s) with the simulated version(s). Clicking 'discard will simply erase the simulation from the graph on the left so you can simulate a different regimen.

Dosage Regimen Forecast

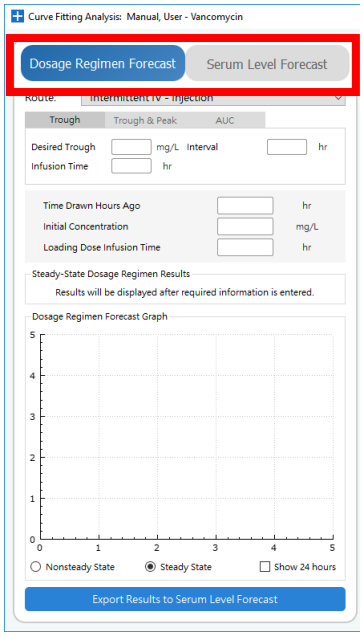


Figure 1.7.3 Dosage Regimen Forecast

The Dosage Regimen Forecast Window (Figure 1.7.3) allows you to target a certain trough, trough & peak, or AUC for the patient's dosage regimen. You can access this by clicking 'Dosage Regimen Forecast' at the top. You can select the route from the drop-down menu at the top. Then you can choose which best to target (Trough, Trough & Peak, AUC) by clicking their respective tabs.

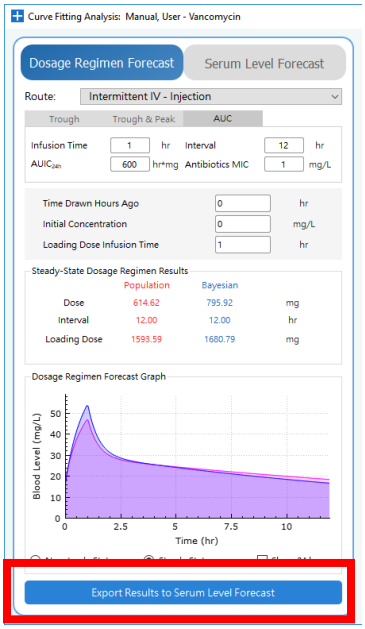


Figure 1.7.4 Targeting AUC and Calculated Loading Dose

Each has their own unique interface according to what information is needed. For targeting a trough, enter in a desired trough, infusion time and interval. For trough and peak, enter a desired trough and peak with the infusion time. To target an AUC, enter an infusion time, interval, AUIC and Antibiotics MIC. The program will automatically calculate and display the dosage needed to target this trough/peak/AUC in steady-state. This predicted dosage in addition to the given infusion time and interval represents the dosage regime for the patient. (1.7.4)

If you would like a specific loading dose to achieve steady-state, you must enter additional blood level information: Time Drawn Hours Ago, Initial Concentration, and Loading Dose Infusion Time. After entering, loading dose will also appear in the steady-state dosage regimen results (1.7.4).

Once satisfied with the dosage regimen forecast, click 'Export Results to Serum Level Forecast' (1.7.4). This will move over the Bayesian calculated dose and user provided infusion time and interval (and MIC value if applicable) over to the serum level forecast as a dosage regime. Then you can use the forecasted dosage regime to forecast a serum level and simulate on the graph. (1.7.5)

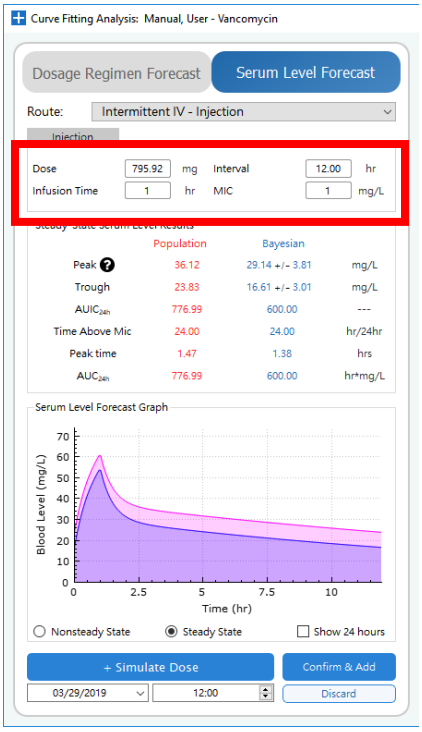


Figure 1.7.5 Dosage Regimen from 1.7.3 Exported to top of Serum Forecast

1.8 Print Report

In the *Patient* & Case window you can print out a patient's drug monitoring report for your records.

To begin printing the report, you must have a computed case. To create a new case under a new patient, please refer to **1.2 Patient & Case Window.** To load an existing case or create a new case under an existing patient, please refer to **1.3 Load Patient & Search Result.**

Whenever you create a new case, you must compute its parameters first before you can print the report (1.8.1).

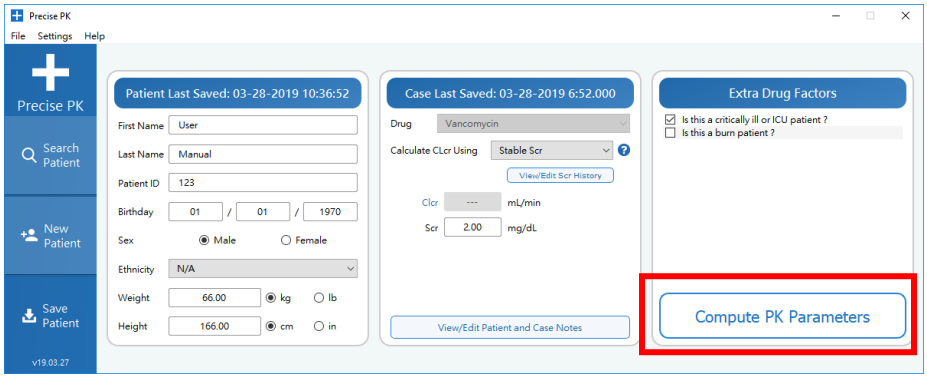


Figure 5.8.1 Patient & Case Window with all information filled in

If you are loading an existing case, the window should refresh to show you the computed parameters.

From there, click the 'Print Report' button on the main window (1.8.2). This will open a new window that will provide a print preview and an option to export the preview to pdf (1.8.3).

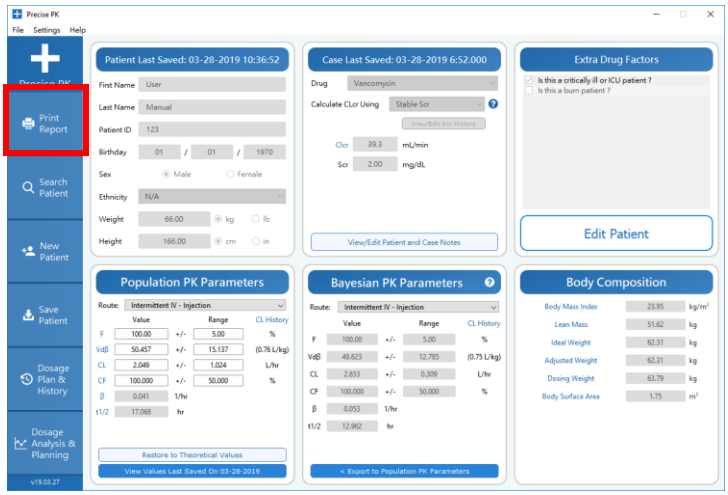


Figure 1.8.2 Patient & Case Window with PK parameters computed

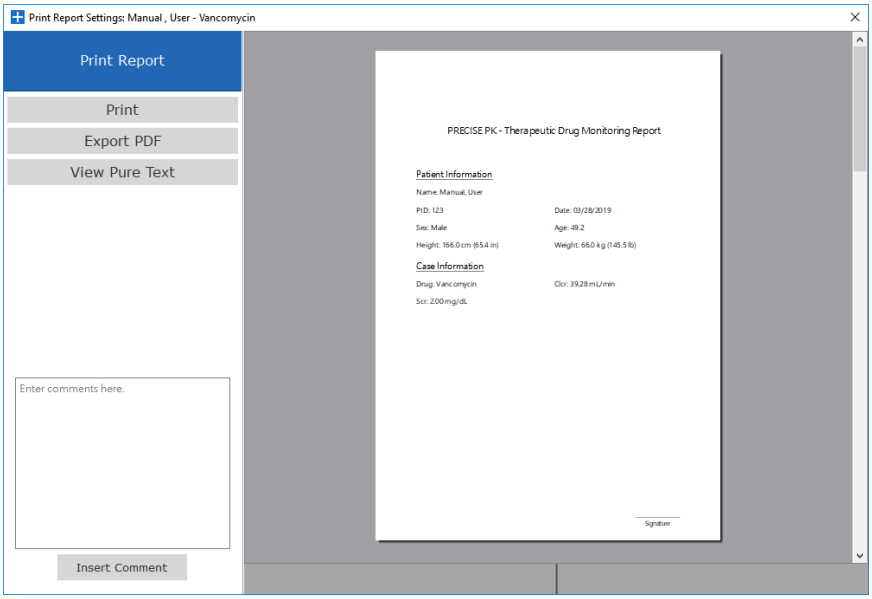


Figure 1.8.3 Print Preview

The basic version of print report includes patient information, case information, and calculated PK parameters. You may add any notes or comments on this page to add to the print report before printing/exporting. Enter text into the 'Enter comments here' field and click 'Insert comment'. Select Print when you are ready to print the report.

Print report also has additional fields that can be included after certain actions are completed. If the patient has a dosage regimen forecast or serum level forecast active (see section 1.7 for more info), then dosage regimen information will appear on the second page as seen below in Figure 1.8.4.

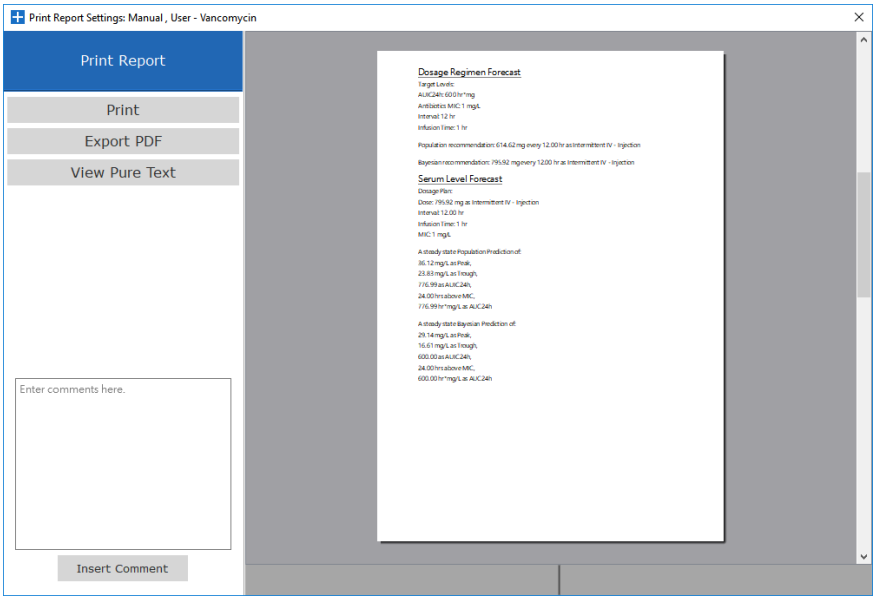


Figure 1.8.4 Print Preview with Dosage and Serum Forecast information

If graphic analysis has been ran for the patient, the serum level graph and the troughs and peaks for the graph also appear on the print report (Figure 1.8.5). Please note that for two-compartment models such as vancomycin, there needs to be at least two dose records for trough to appear.

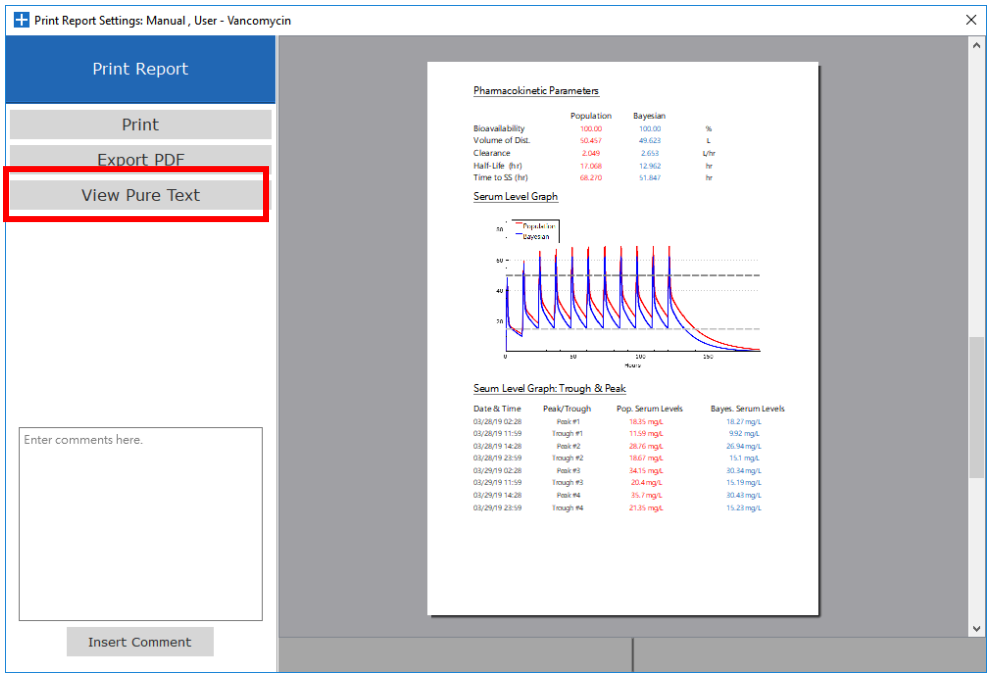


Figure 1.8.5 Print Preview with PK Parameters, Serum Graph and Trough & Peak

View Pure Text (highlighted in 1.8.5) allows for easy data movement from the print report. A plain text report is generated, and users can copy this text to clipboard and paste where necessary.

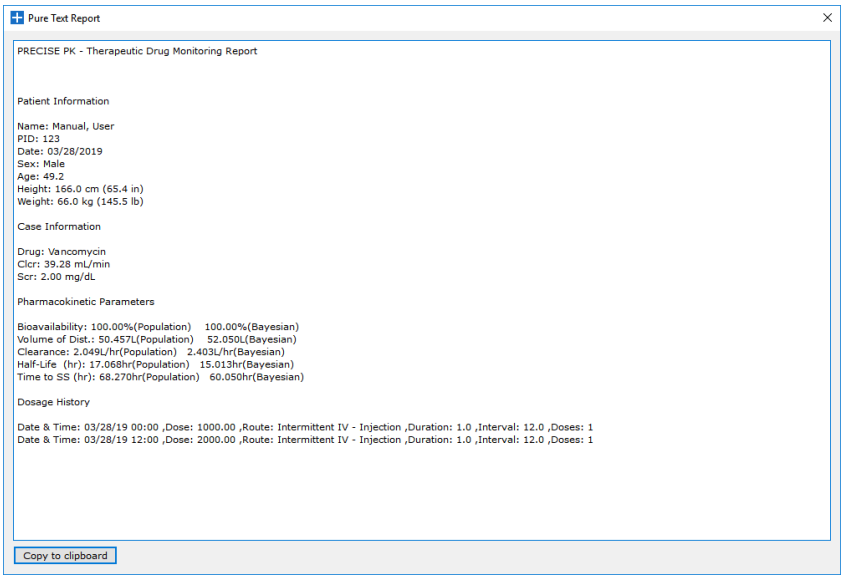


Figure 1.8.6 View Pure Text

1.9 Program Settings

In PrecisePK, you can change several different program settings that can affect your program's appearance and functionality. To navigate to your program settings, go to the Menu bar at the top of the Welcome screen (1.9.1).

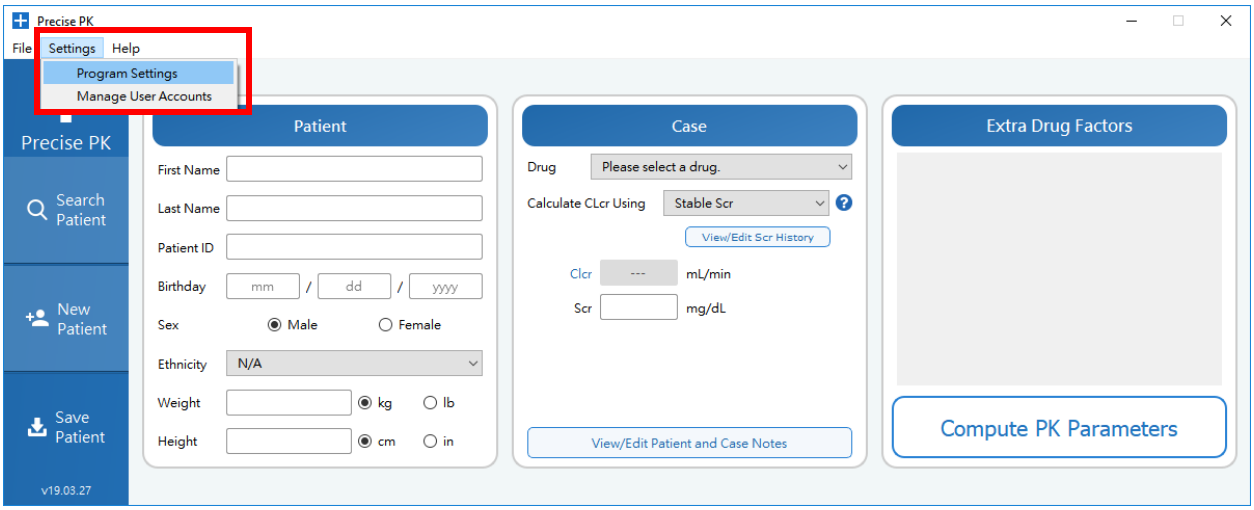


Figure 6.9.1 How to Navigate to your *Program Settings*

A new window will appear. You may select what type of program settings you would like to change on the left-hand side menu and then changing specific program settings on the right-hand side (1.9.2).

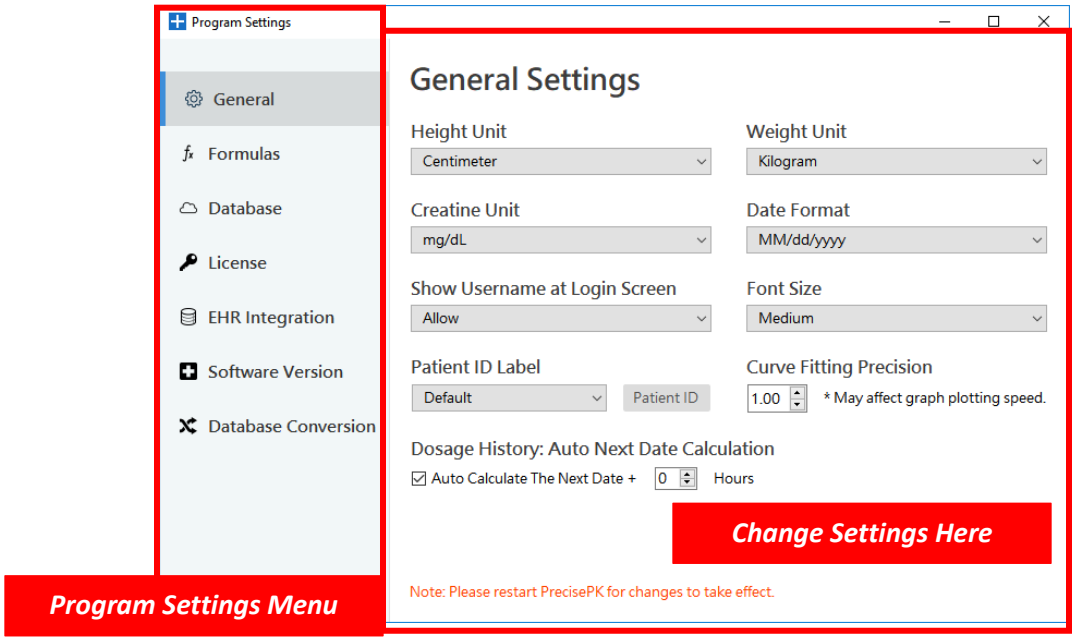


Figure 1.9.2 Program Settings Page

General Settings

The 'General Settings' contain settings regarding the application's appearance (1.9.3). You may change the following under 'General Settings.'

- Height Unit: the unit of measurement for height in centimeters (cm) or inches (in).
- Weight Unit: the unit of measurement for weight in pound (lbs) or kilograms (kg).
- Creatine Unit: the unit of measurement for serum creatine in milligrams per deciliter (mg/dL) or micromole per liter (umol/L).
- Date Format: the format of dates in year/month/date/, month/date/year, or date/month/year.
- Login: whether your username will appear on the login screen
- Font: the size of the font across the entire program in small, medium, or large.
- Patient Label: the text that represents the patient's ID. You can choose the default one or create a custom label.
- Curve Fitting Precision: How close the program will try to fit the curve to points (decreased value could lead to faster graph plotting time)
- Dosage History: Auto Next Date Calculation: whether the dosage history will automatically add a certain amount of hours onto the next row in the 'Time' column. You can also choose how many hours the program will automatically add. See **1.5 Dosage Plan & History** for more information on entering a patient's dosage history.

Note: Please restart the program after any changes so they take effect.

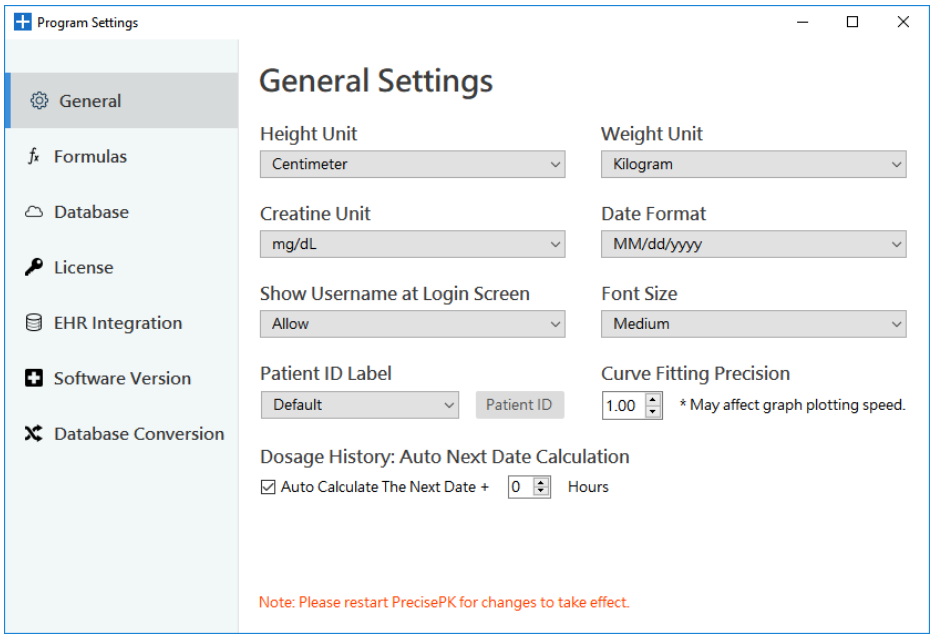


Figure 1.9.3 General Settings

Formulas

The 'Formulas' portion of Program Settings allows you to change how the program calculates certain factors (1.9.4). In the Clcr portion, you can choose which formula to use as the default calculation based on the method (stable or changing).

For pediatric patients (18 years and below), you can choose between Schwartz or Shull. Additionally, pediatric patients can be calculated using a denormalized or normalized formula. Selecting normalized will divide the calculation by the pediatric patient's body surface area.

For adult patients (above 18 years), Cockcroft-Gault or Hallynck can be chosen for stable creatine clearance calculations. If changing serum creatine calculation is selected, Jelliffe Hallynck or Chiou can be chosen.

There are situations where the program will override the selected calculation. If a patient is under 6 months old, the pediatric fixed formula will be used. If a patient is between 6 months and 18 years old and changing serum creatine is selected, Hallynck will always be used. And if the hours entered for a changing serum creatine patient is under 24, Chiou will be used. You can always check the formula used after calculation by clicking on the factor, more details can be found in **1.4 Main Window**.

The Infusion Peak Time Definition affects the peak time computed for any two-compartment models, such as vancomycin. With the drop down, you can select between end of distribution phase, end of infusion, or a certain time (0.5, 1, 2, 3 hours) after end of infusion.

When changing any of the formulas, please make sure to restart the program for changes to take effect.

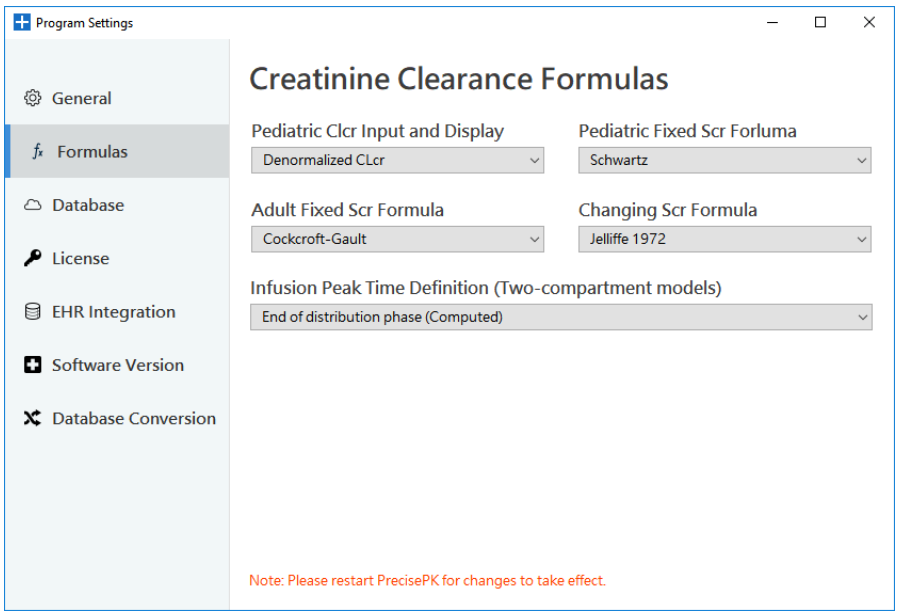


Figure 1.9.4 Calculation

Database

The 'Database' portion of the 'Program Settings' provide information and actions pertaining to your linked database and its respective data (1.9.5). The following information is listed:

- Your current database/local path
- The date of your last backup

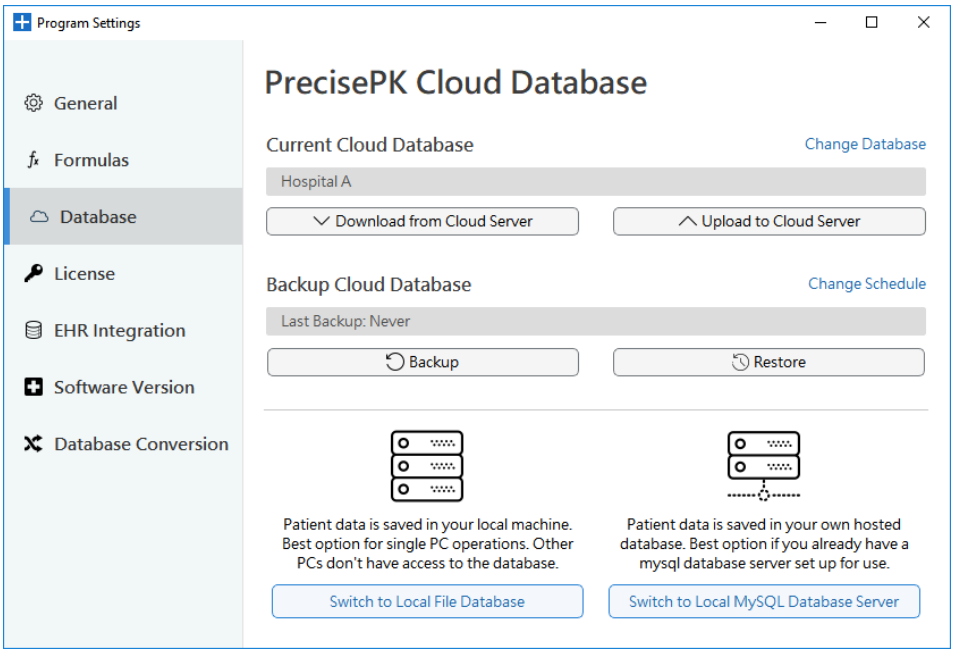


Figure 1.9.5 Database

Choosing your Database

If you are using a **Cloud** database, you can upload local data to your cloud server or download data from your cloud server into your local files. To do so, select 'Upload Local Data to Cloud Server' or 'Download Data from Cloud Server'.

If you are uploading local data, a window will appear (1.9.6). This window will inform you that data between the local and cloud databases must be synchronized prior to uploading. Furthermore, it will inform you that the process may take up to 15 minutes to complete and that you will be unable to use the program until the upload is complete. Click 'Upload Now' to begin.

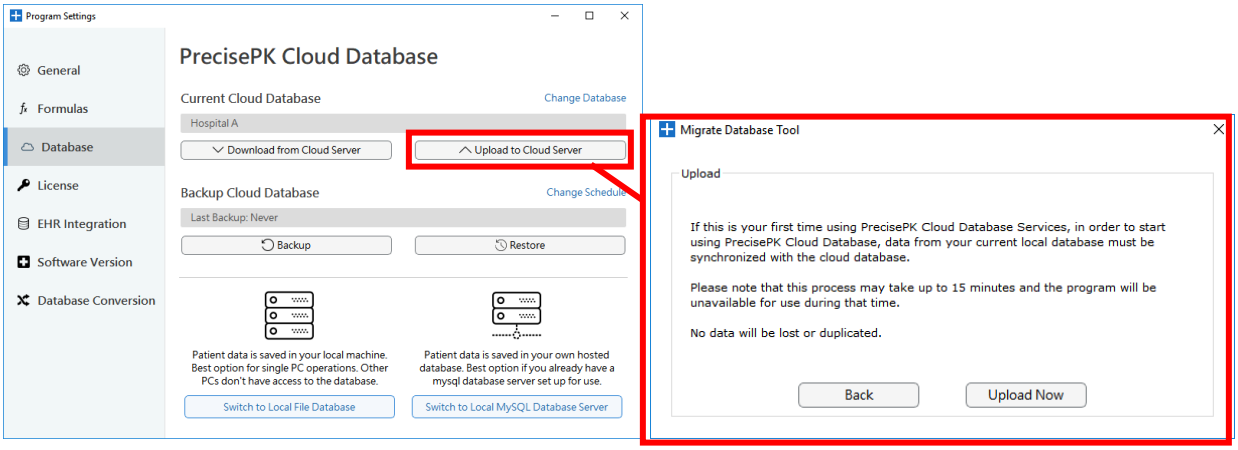


Figure 1.9.6 Upload Data to Cloud Server

NOTE: You can only upload local data to an **empty** cloud database.

If you are downloading data, you will be prompted to select where you would like to save the data on your local hard drive (1.9.7).

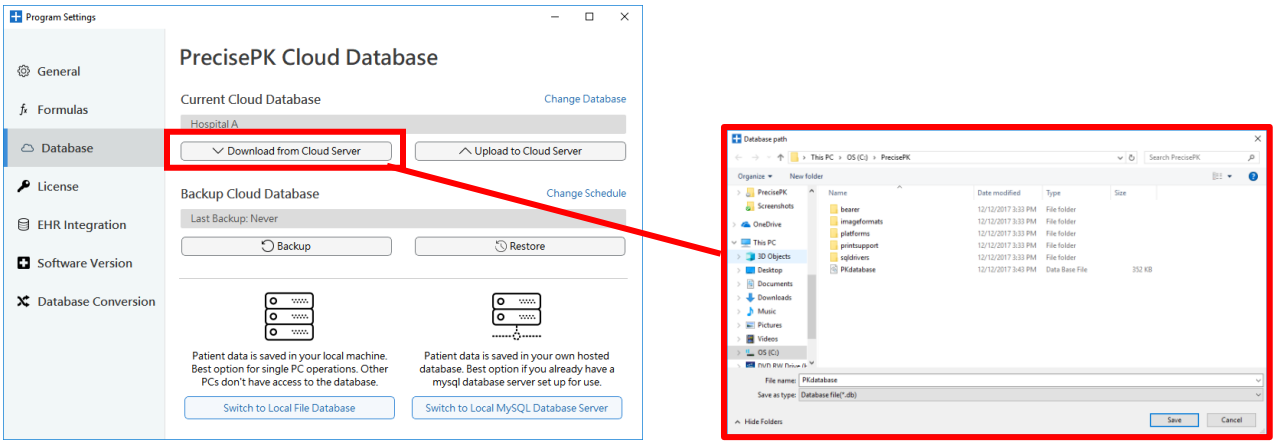


Figure 1.9.7 Download Data from Cloud Server

Your cloud server can hold up to three cloud databases. You can change which cloud database you are using by clicking the 'Change Database' link, highlight your desired database, and clicking 'Use Database' (1.9.8)

You can also view when your databases have been last accessed, rename databases, or create new databases.

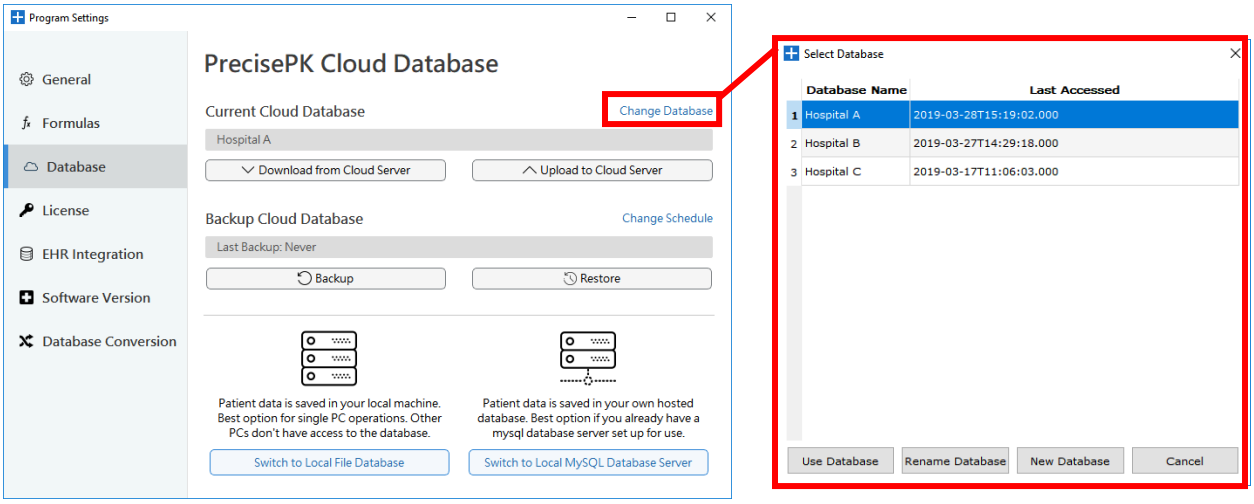


Figure 1.9.8 Select your cloud database

If you are using a local file database, you can change the local path destination of your database by clicking the 'Change Path' link (1.9.9). This will open your device's File Explorer (1.9.10). Navigate to the destination you would like to store your database.

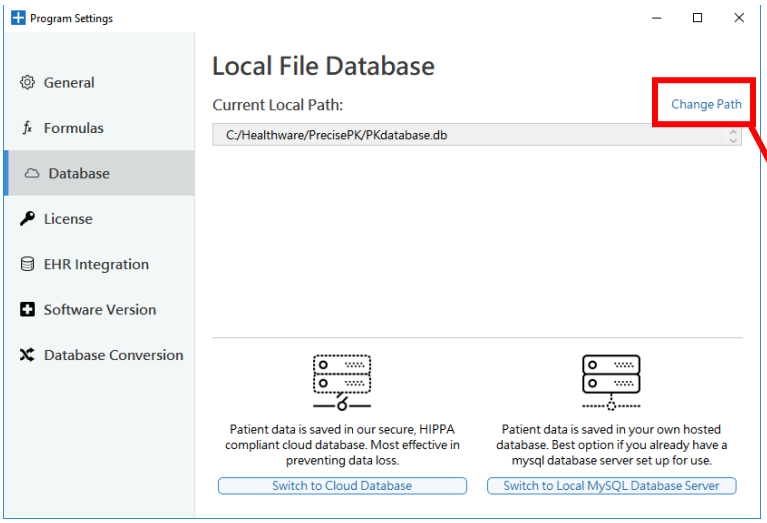


Figure 1.9.9 Local file database options

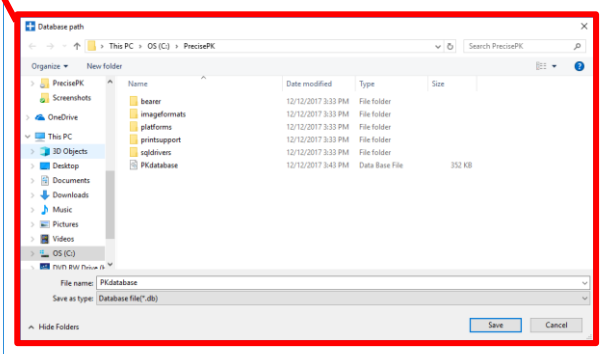


Figure 1.9.10 Select/Change path

You can switch between a cloud database or a local file database at any time by clicking 'Switch to Cloud Database' or 'Switch to Local File Database' (1.9.11)

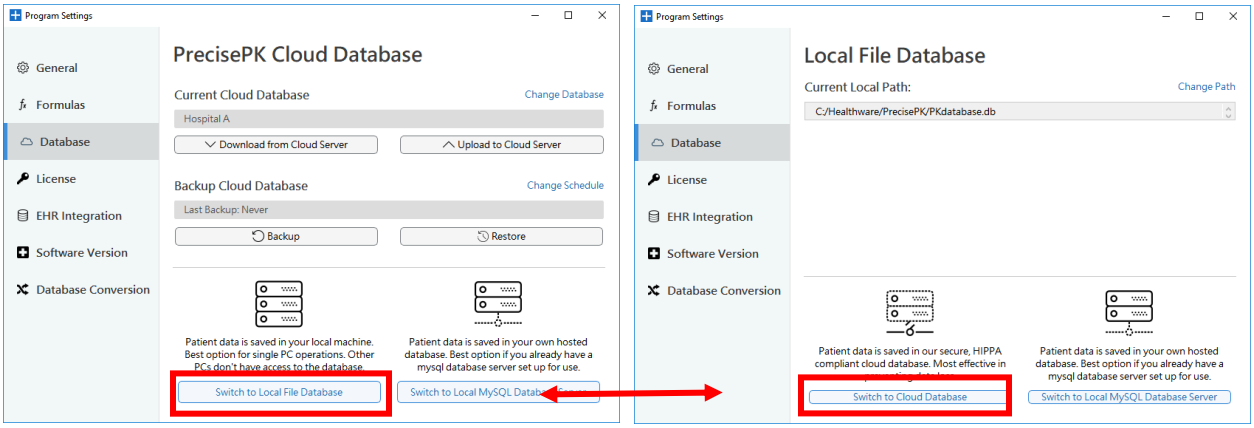


Figure 1.9.11 Switch between Cloud and Local File databases

Additionally, you can switch to a **Local MySQL Database Server** to store your information as well. To switch to a Local MySQL Database Server, click 'Switch to Local MySQL Database Server' and enter the host name, port, database name, your username on the server and its respective password (1.9.12). Then, click 'Connect.'

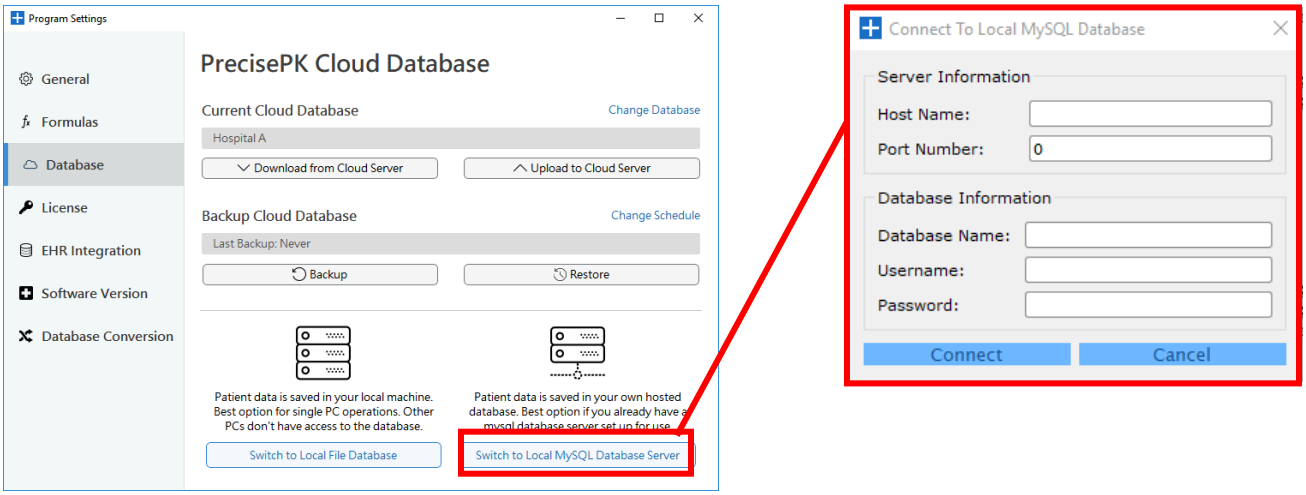


Figure 1.9.12 Connect to a Local MySQL Database

NOTE: If you create new patients and data under one database, you must use that database as your current database to load and edit those patients' information.

Backup your Database

You can also backup all your data with the *Program Settings* window and restore all the information preserved since your last backup (1.9.13). You can manually backup your database by clicking 'Back up.'

You can schedule regular backups by clicking 'Change Schedule.' A window will appear (1.9.14). From here, you can select the backup frequency in the drop-down menu. You can choose to backup 'Never,' 'Daily,' 'Weekly,' and 'Monthly.' Click 'OK' to confirm your choice.

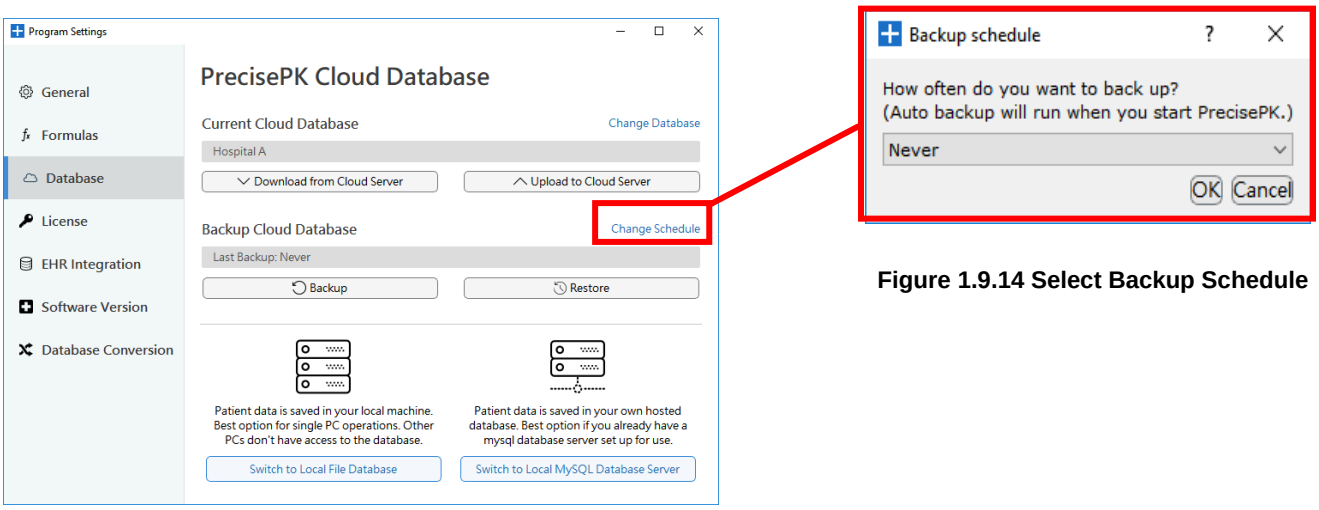


Figure 1.9.14 Select Backup Schedule

Figure 1.9.13 Backup Options

If your database has changed, you can reverse these changes by restoring your database to the state it was in since your last backup. To restore your database, click 'Restore' (1.9.15).

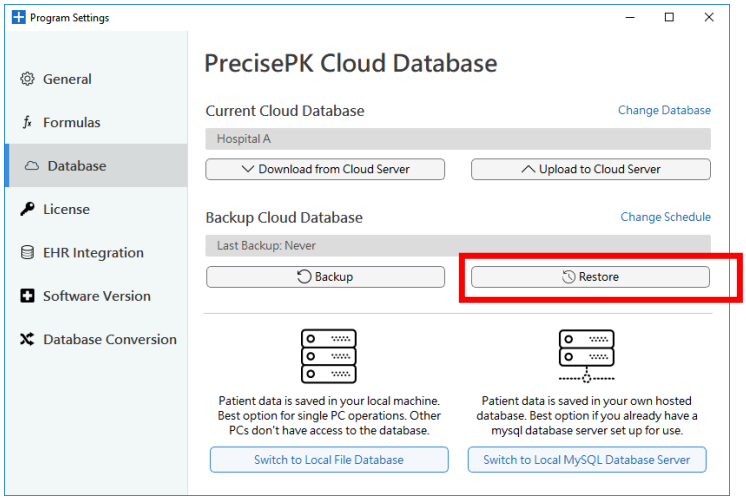


Figure 1.9.15 Restore database

License

The 'License' portion of the 'Program Settings' provide information and actions pertaining to your PrecisePK license (1.9.16). The following information is listed:

- Institution Name
- Computer Name
- License Name
- License ID
- License Expiration Date
- Number of devices currently active
- Number of devices total allowed

From this window you can also update or deactivate your license, as well as manage the devices under your license. To deactivate individual devises or buy additional licenses, click the 'Manage Devices' button. A new window will appear showing you the list of devices under your license (1.9.17).

For more information on licenses, please read **Installation Guide.**

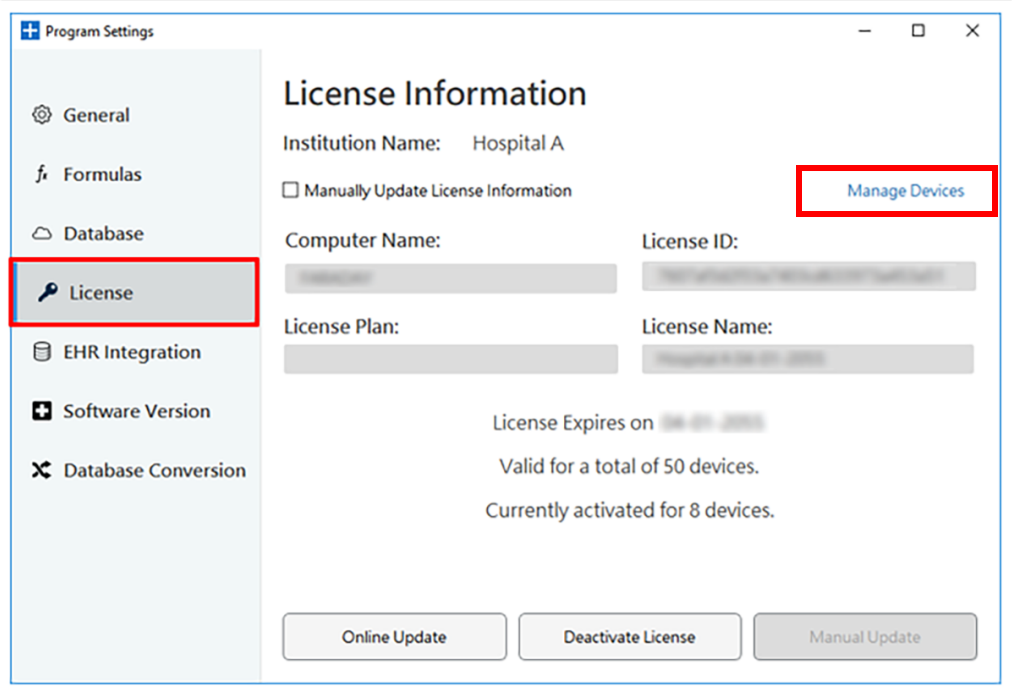


Figure 1.9.16 License

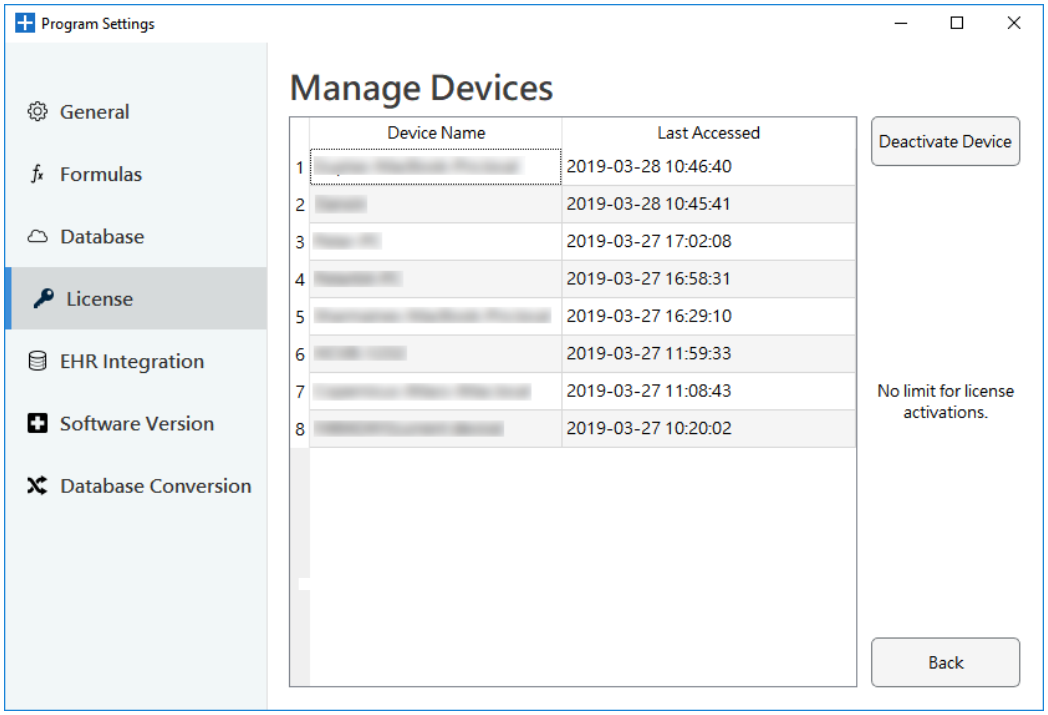


Figure 1.9.17 Manage Devices

EHR Integration

The EHR integration window allows you to integrate your EHR system with PrecisePK. Currently we support Cerner and Epic systems. The integration is only enabled on Enterprise level licenses. Please contact PrecisePK for additional information on EHR if you are interested in integrating.

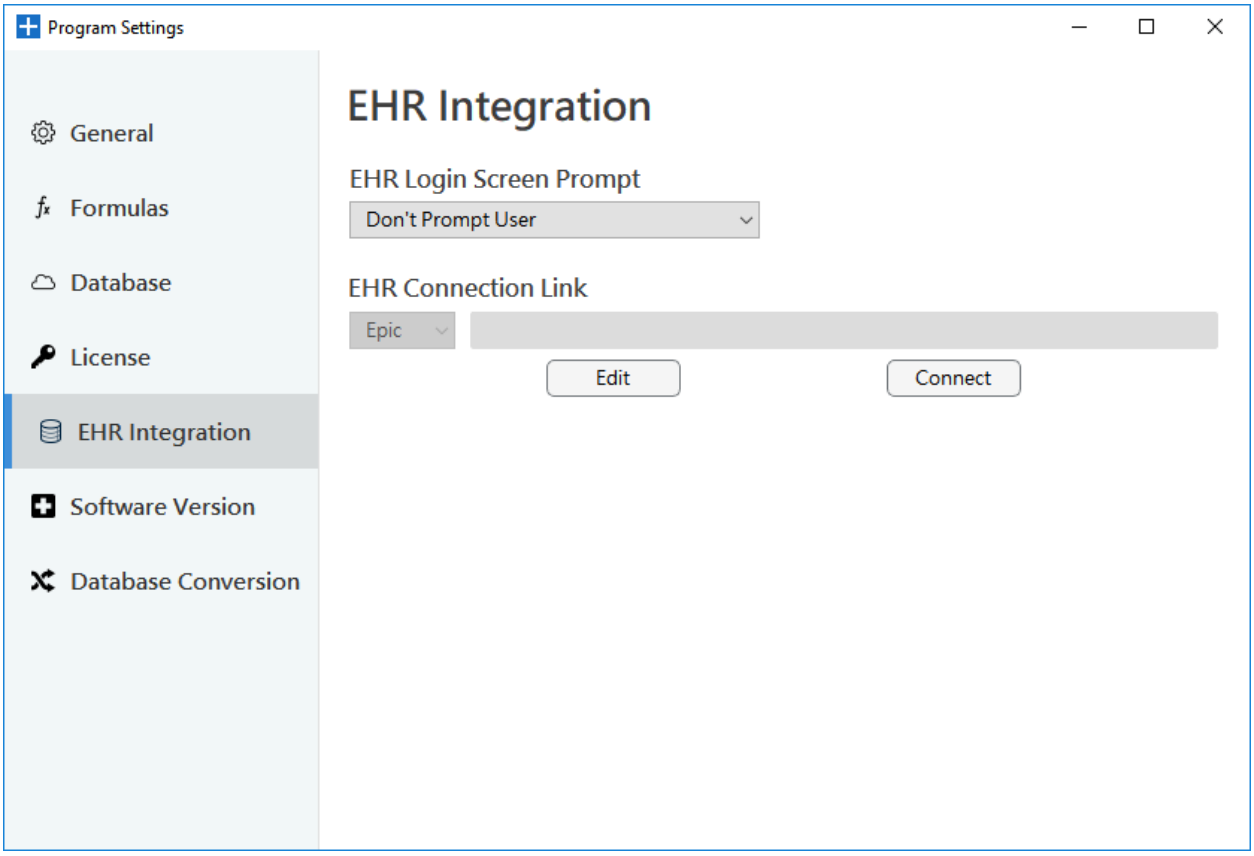


Figure 1.9.18 EHR Integration

Software Version

The 'Software Version' portion of your *Program Settings* allows you to update your PrecisePK program whenever a new version is available (1.9.19).

You can view what PrecisePK version you currently have next to 'Current Version'. This information is also included in the title and on the bottom left of the main window.

You can schedule your PrecisePK program to check for new updates at a desired frequency. To choose the check frequency, select 'Monthly,' 'Weekly,' 'Daily,' or 'Never' from the dropdown menu next to 'Update Check Frequency.'

You can manually update your program by clicking the 'Software Update' button.

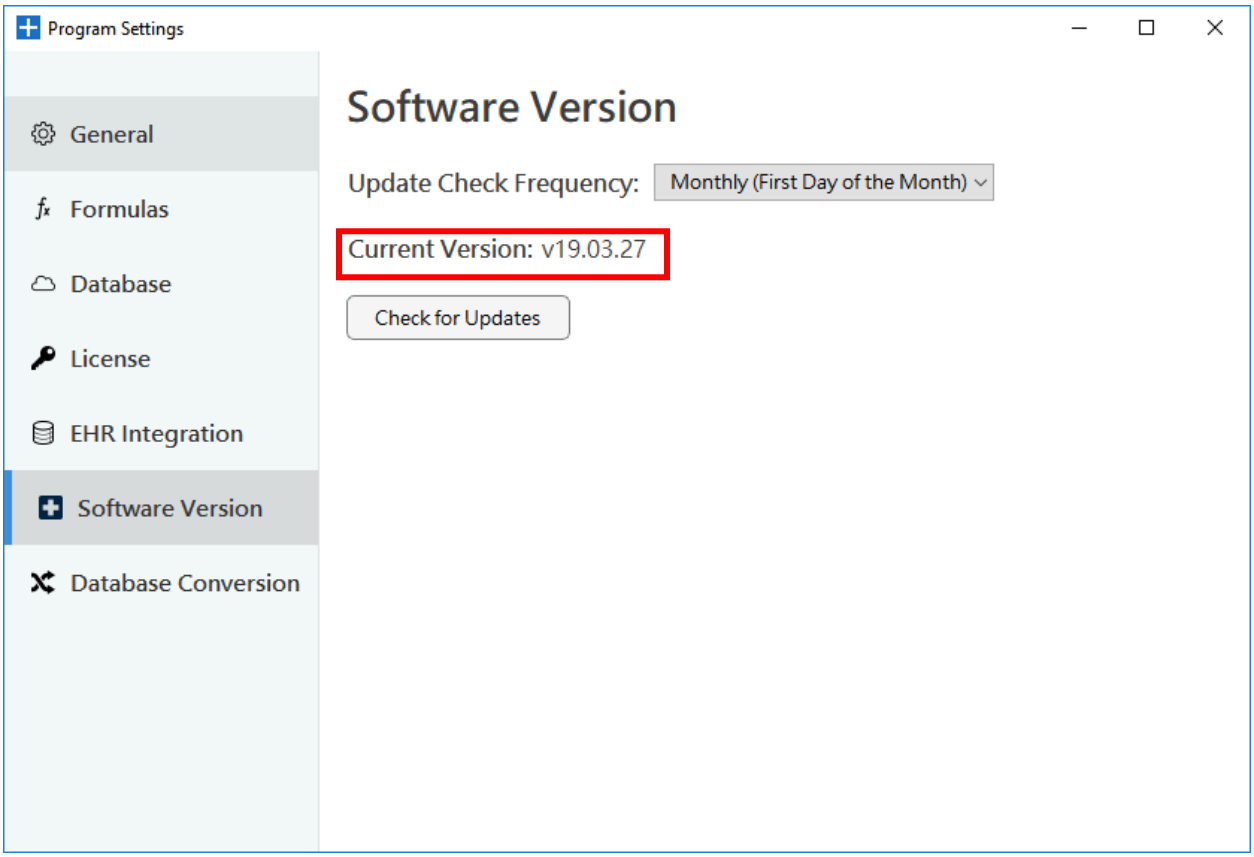


Figure 1.9.19 Software Version settings and how to know your current version

Database Conversion

If you used TDMS2000 prior to using PrecisePK, you can transfer all your data from TDMS2000 to your PrecisePK database (1.9.20).

Pre-Conversion: Switch to a local file database if you are not already using one. For additional instructions, view **Database** above.

Step 1: Place your TDMS2000 data into a local file database. Click the 'Change' button under 'TDMS2000 Database Path' and locate your database.

Step 2: Your local PrecisePK database's file path will be entered under 'PrecisePK Database Path'. If you would like to change this, please go to database and switch to the correct local file database.

Step 3: Click 'Start Conversion.' The conversion's progress will be shown in the loading bar.

Step 4 ***OPTIONAL:*** If you would like to transfer your data to a cloud database, navigate to the *Database* settings in your *Program Settings* menu. See instructions on uploading local data to a cloud database in **Database** above.

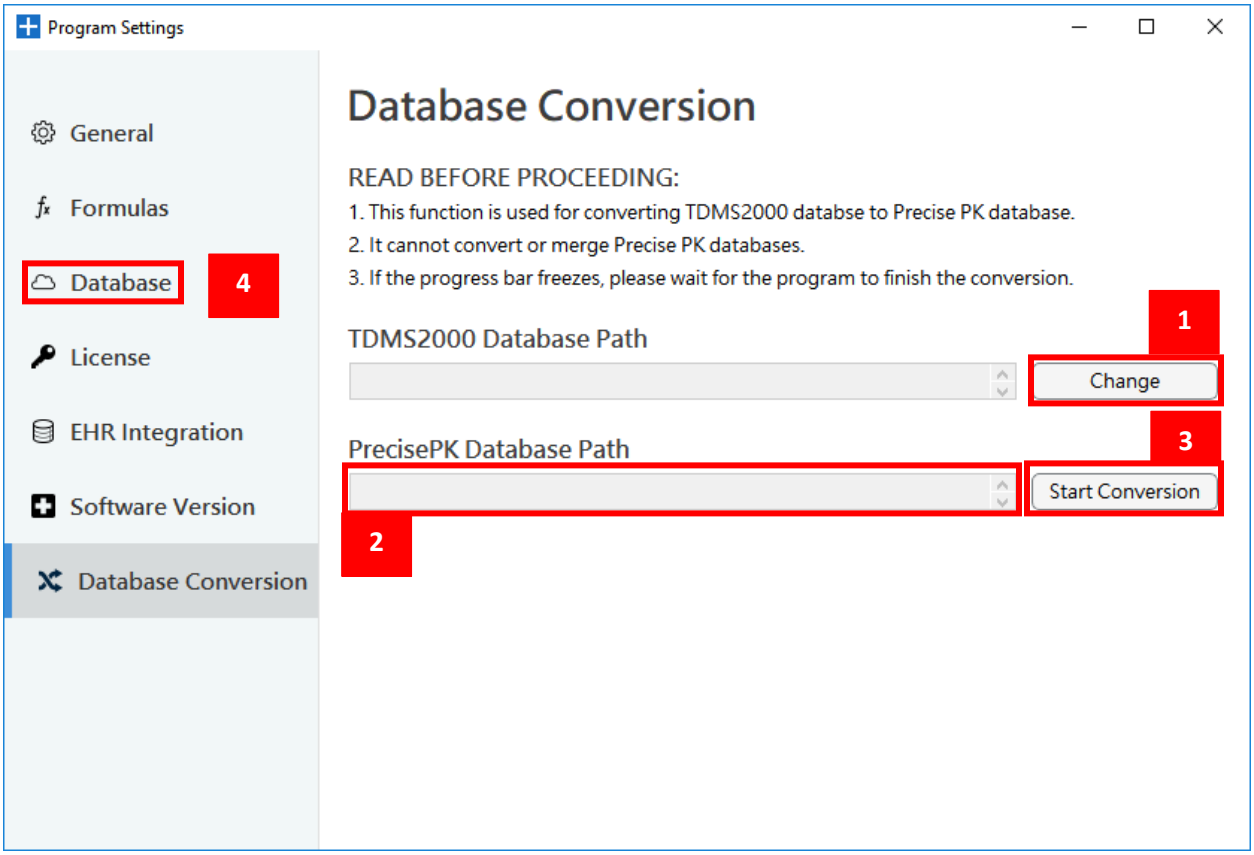


Figure 1.9.20 Convert Database

1.10 User Account

PrecisePK comes with 3 types of users, each with different levels of permissions and limitations. Below is a table describing the 3 user types:

User Type	Limitation
Demo	• No access to database • Fixed patient name • Allowed drugs: Vancomycin, Theophyline, Gentamicin • Can only view User Choice Drug page (cannot submit) • Can update license
Normal User	• Cannot add / delete user • Can only change current user's info • Can update license • Can access database
Administrator	• Full permissions (no limitations)

User Accounts are created or managed in the Manage User Accounts settings window. You can access this window by going to Settings > Manage User Accounts. (Figure 1.10.1)

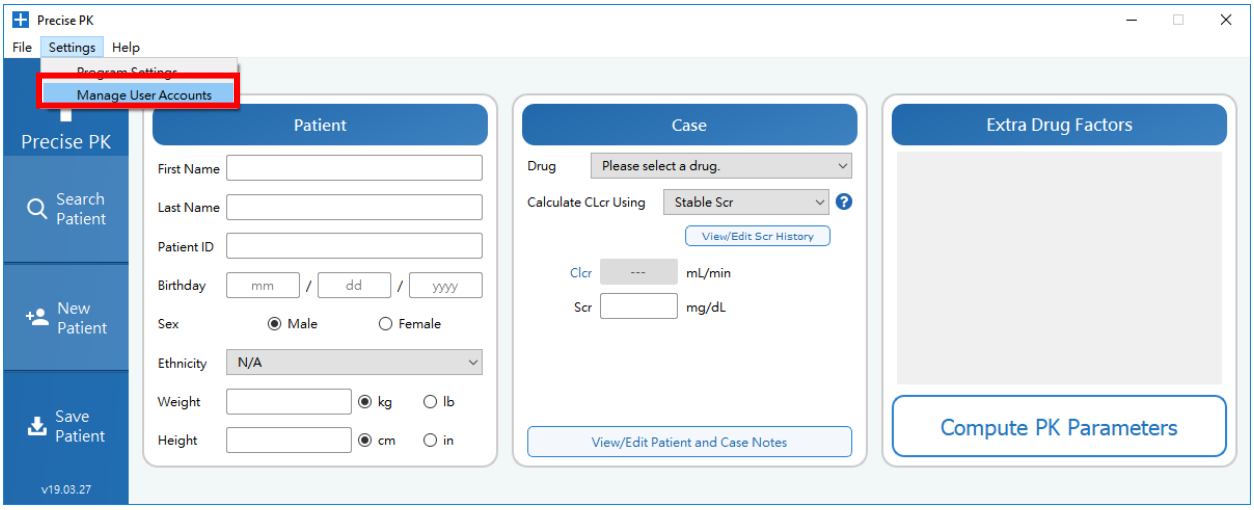


Figure 1.10.1 Access Manage User Accounts

By default, PrecisePK will run in Demo Mode, until a valid license is registered to the software.

Once you have registered the software with a valid license and configured the database correctly, a default Administrator will be created with the following information:

- ID: 1
- Username: admin
- Name: admin
- User Type: administrator
- Password:
- Password field is blank because there is default no password

If there is more than one user (Normal User or Administrator), or if only one user has set up a password, then a Login Window (Figure 1.10.2) will appear every time PrecisePK is launched.

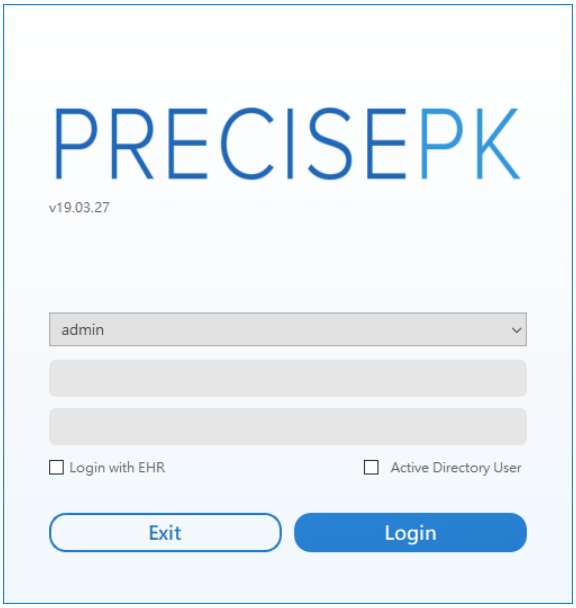


Figure 1.10.2 Login Window

The user can select the User Name from the dropdown menu and input the password (if no password is set for that user, then this step can be skipped), then click the Log In button. If the user deselects the "Show Username at Login Screen" box in Program Settings (see how in **1.9 Program Settings)** then the User Name will need to be manually entered.

The user can also login as an Active Directory User by checking the 'Active Directory User' box under domain. Refer to **Active Directory Users Setup** for more information.