

 **safeMedicate**

Be competent, be safe



Essential Skills



Advanced Skills

**Student and Practitioner
*User Guide***



Authentic World
reducing medication error

SAFEMEDICATE
VERSION 2.0

Student and Practitioner User Guide

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Statement on Cognitive Competence Development

Where the terms ‘competence’ or ‘competency’ are used within **safeMedicate** and its associated documentation including user guides, sales and marketing materials and website content, we refer explicitly to Cognitive Competence as defined by the European Parliament (2008)¹ in its recommendations on the establishment of a European Qualifications Framework for Lifelong Learning. In this sense, *Cognitive Competence* relates only to the development and assessment of knowledge of the medication dosage calculation problem solving process and excludes any other forms of competence such as *functional*, *personal* or *ethical* competence that will be required for safe medication practice in a clinical setting.

¹ European Parliament (2008) Glossary: RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning. [online] EUCEN. Available from: www.eucen.org/EQFpro/GeneralDocs/FilesFeb09/GLOSSARY.pdf [Accessed 28 September 2009]

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The safeMedicate Cognitive Competence Model

safeMedicate facilitates the learning, and authentic diagnostic assessment, of the cognitive competencies that establish the critical foundations of patient care knowledge within the domain of medication dosage problem solving.

Cognitive competence in medication dosage problem solving consists of three inter-related elements as illustrated in the figure below:

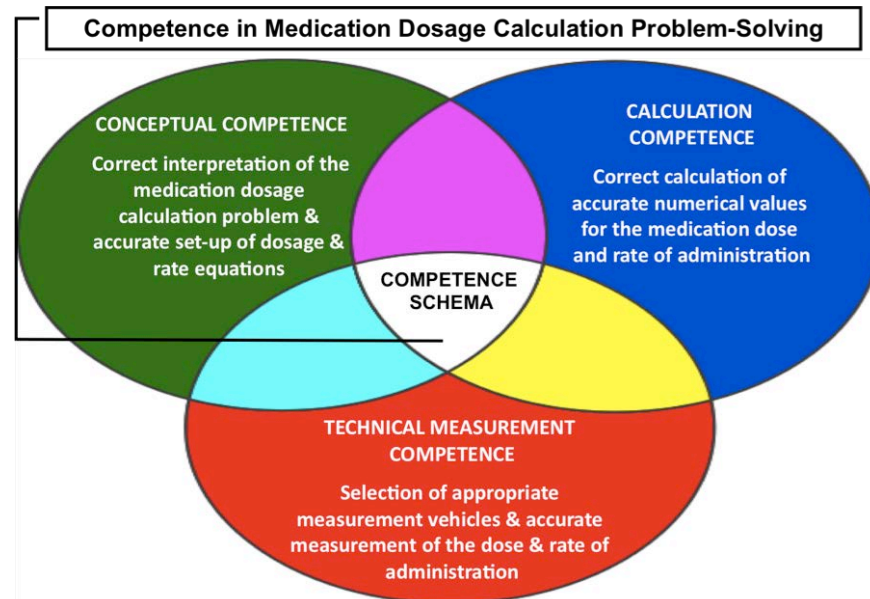


Figure 1 - the safeMedicate Cognitive Competence Model

- **Conceptual Competence:** which involves correctly interpreting a medication dosage calculation problem and accurately setting up a dosage equation.
- **Calculation Competence:** which involves correctly calculating an accurate numerical value for the dose or rate to be administered.
- **Technical Measurement Competence:** which involves selecting an appropriate measurement vehicle and accurately measuring the dose or rate to be administered.

The figure below demonstrates an example of the three competence elements of a liquid medicines dosage problem, which shows:

- **Conceptual Competence:** the extraction of essential numerical information and measurement units from medication orders and labels and the principles of dimensional analysis.
- **Calculation Competence:** the calculation of an appropriate numerical value for the dose to be administered.
- **Technical Measurement Competence:** the technical measurement of the dose to be administered in an appropriate measurement vehicle.

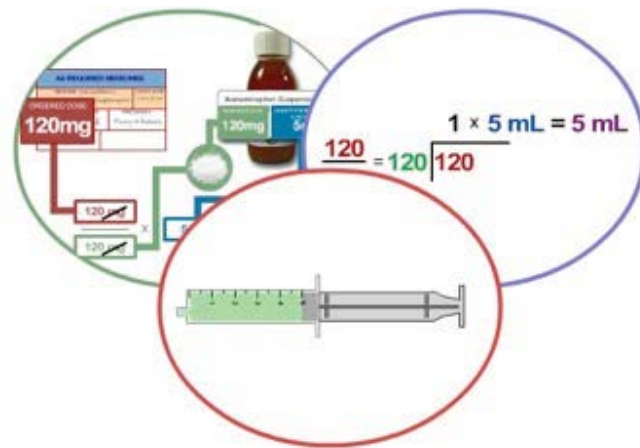


Figure 2 - the three competence elements of a liquid medicines dosage problem

The figure below shows how the *safeMedicate* cognitive competence model locates within the base layer of the Authentic World Hierarchy for Learning.

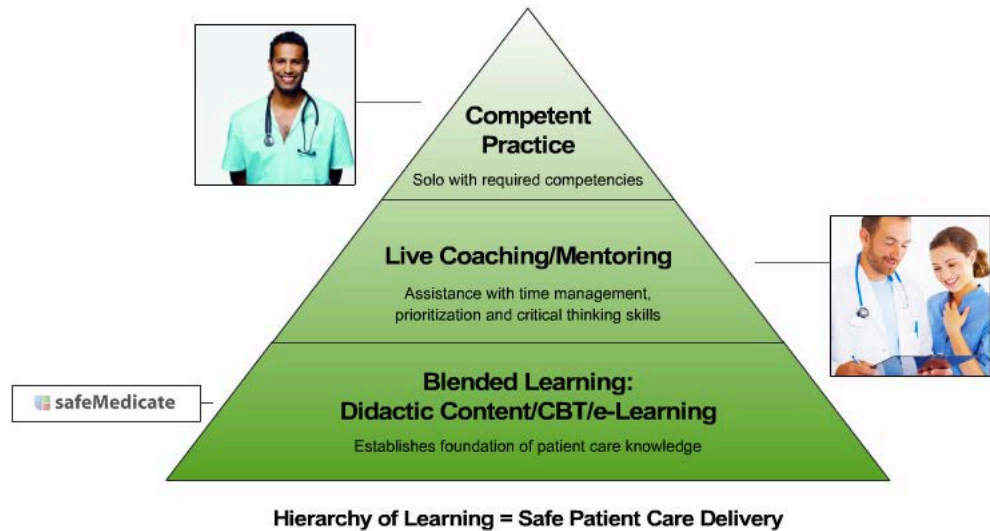


Figure 3 - the Authentic World Hierarchy for Learning

safeMedicate is designed to support the learning, synthesis and diagnostic measurement of cognitive competence in the critical elements of medication dosage problem solving that underpin the application of further competence development and evaluation within each of the remaining levels of the Authentic World Hierarchy for Learning.

- Competence evaluation during simulated clinical experiences and engagement with human patient simulators.
- Competence evaluation in clinical practice settings under the supervision of an experienced mentor.
- Competence achievement consistent with independent practice.

Getting Started

This latest release of *safeMedicate* is accessible from any Internet connected computer including tablet devices such as iPad and smartphones. Open a web browser and go to the following URL to access the *safeMedicate* home page:

www.safemedicate.net

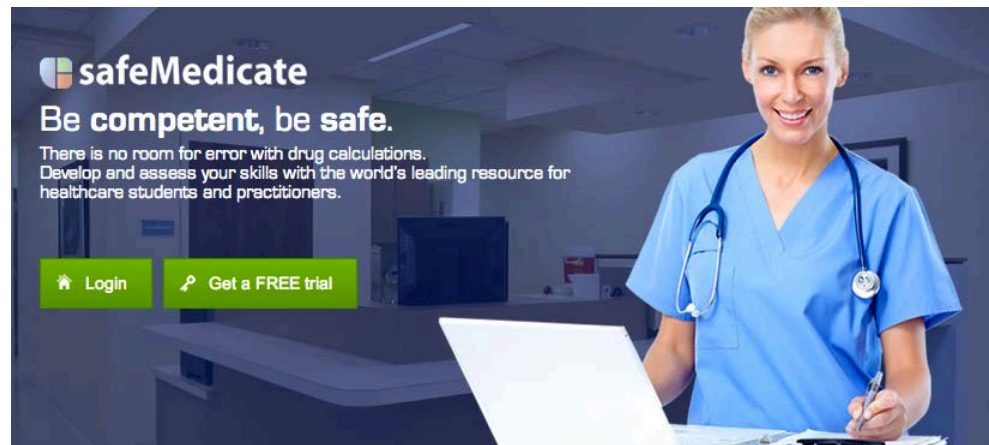


Figure 4 – safeMedicate Home Page

Click on the Login button to get started.

Welcome to safeMedicate

Welcome to the new version of safeMedicate!

You can log in with either your username or your registered email address.

If this is the first time you have used safeMedicate you must first register your account.

SafeMedicate Transition Guides

- [User's Transition Guide](#)
- [Administrator's Transition Guide](#)

For a limited time you can still use the old version of safeMedicate using the SM v1 link below.

Sign in or [Register a new username](#)

Email / Username

Password

Remember Me

Login

[Forgotten your login details?](#)

Figure 5 - safeMedicate Login Page

At the Login page enter your email address or username and password and click the *Login* button – you will be taken to the safeMedicate Home Page.

The Home Page

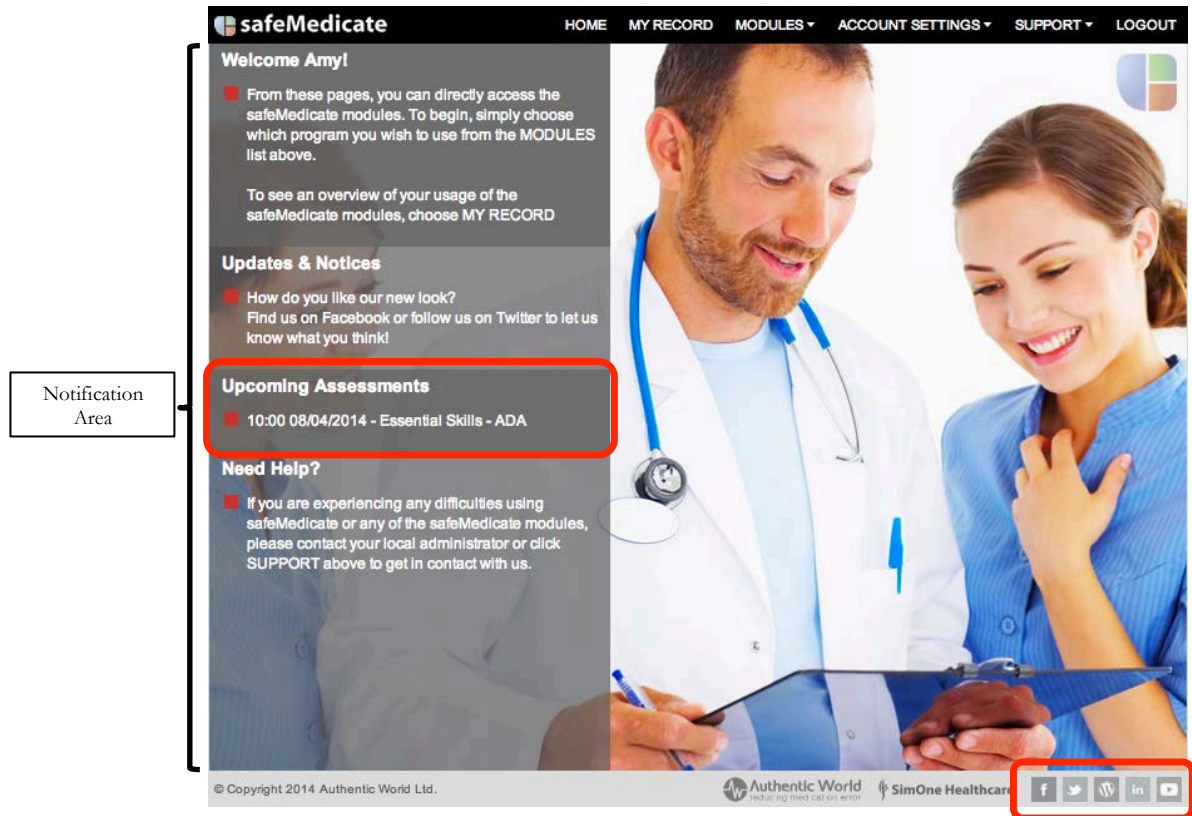


Figure 6 – the safeMedicate Home Page

All of the features and functions of *safeMedicate* are accessible from the main menu located at the top of this page. We will look at each menu option in detail in the following pages of this user guide.

Notification Area

The left hand column of the home page is the **Notification Area**. We'll use the *Updates & Notices* section to post news on any new features or changes we plan to safeMedicate or to draw your attention to important information. The *Upcoming Assessments* section is where you'll be alerted to any assessments that have been scheduled for you as in the example above – check this area frequently so that you don't miss an important test!

Social Buttons

At the bottom right of the page you'll find access to our various social channels including Facebook, Twitter, our Blog, LinkedIn and YouTube. We use Facebook and Twitter in particular to share information with you and also to invite you to participate in the various competitions we run throughout the year. Please take the time to like us on Facebook and follow us on Twitter!

Main Menu Options



Figure 7 – the Main Menu options

The first thing to note is that the Main Menu stays visible wherever you are within *safeMedicate*. This makes it easy to move around from one module to the next. Starting from the left, the menu options are:

- **Home** - this is just a quick way to always bring you back to the home page shown in Figure 6.
- **My Record** – this is where you access information relating to your usage of *safeMedicate* including your assessment results.
- **Modules** - hovering your mouse over this item opens a list of all the *safeMedicate* learning modules you have access to. You'll also find the **Assessments** module which is where you will access any assessments that have been scheduled for you.
- **Account Settings** - this is where you can update any of your details such as email address or change your password. You can also find a list of the *safeMedicate* modules you have access to and the dates on which these accounts will expire.
- **Support** - this menu item provides information on who to contact in your local institution for first level support. You can also get access to our new *Customer Support Service* where you can get extra help directly from us should you need it.
- **Logout** - the very last item on the menu is the logout button. When you're finished working with *safeMedicate* just click here to log out safely.

Your User Record

Click on the **My Record** menu item to open the page shown below.

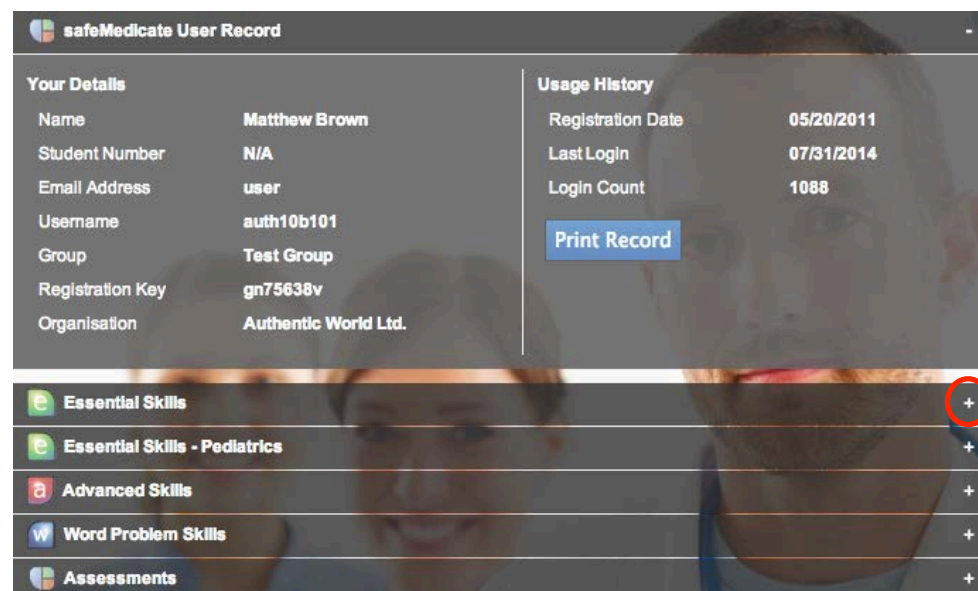


Figure 8 - your safeMedicate User Record

Your **User Record** contains up to 6 sections that are displayed as separate ‘panels’ of information. The number of sections will depend on which modules you have access to.

1. User Record
2. Essential Skills
3. Essential Skills - Pediatrics
4. Advanced Skills
5. Word Problem Skills
6. Assessment

User Record

By default, when the record displays only the top section/panel (User Record) is open as in the example. The left side of the panel contains your basic details while the right side of the panel shows your usage history.

To open any of the other panels of information click the + symbol located to the far right of the chosen panel as highlighted in the figure above.

Essential Skills

The left side of this panel (see figure below) shows your usage history and progress data for the module. Note that progress is shown as a % complete for each section of the module. You will show 100% complete only when you have accessed each page within that module.

The right side of the panel lists your assessment history. These are all the self-administered (practice) assessments you have taken in this module. Note the list shows the assessment date, medication domain and score. To view any of the detailed assessment results click directly over the chosen record. The assessment results are displayed as described in the next section of this guide.



Figure 9 - the Essential Skill information pane

Essential Skills – Pediatrics

Information on this panel is presented in a similar format as for *Essential Skills*.

Advanced Skills

Information on this panel is presented in a similar format as for *Essential Skills*.

Word Problem Skills

Information on this panel is presented in a similar format as for *Essential Skills*.

Assessment

The *Assessment* panel lists assessments that have been scheduled for you by your institution as in the example below. Note that the list shows the date of the assessment and the module it is related to.

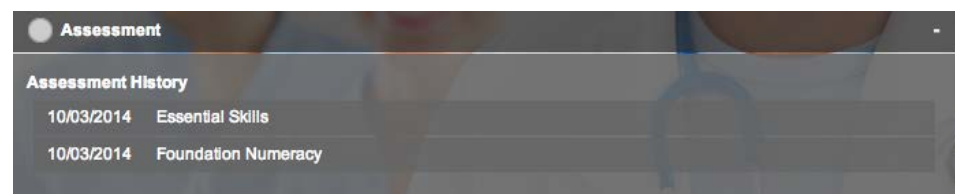


Figure 10 - Assessment History list

To view any of the detailed assessment results click directly over the chosen record. The assessment results are displayed as described in the next section of this guide.

Printing Your User Record

On the *User Record* screen (see Figure 8) click **Print Record** to print a copy of your record. The report will provide a summary of your engagement with each of the modules.

Viewing Your Assessment Results and Feedback

To access your assessment results and feedback click directly over the chosen assessment in the *Assessment History* list (see Figs. 9&10).

An **Assessment Summary** screen is shown that provides a total score and an overview of every question showing how each element (*conceptual, calculation and technical measurement*) has been marked. Alongside each question number are color-coded blocks that relate to the problem domain (e.g. tablets and capsules) and problem complexity (e.g. unit dose). A key for these can be found at the foot of the **Assessment Summary** page.

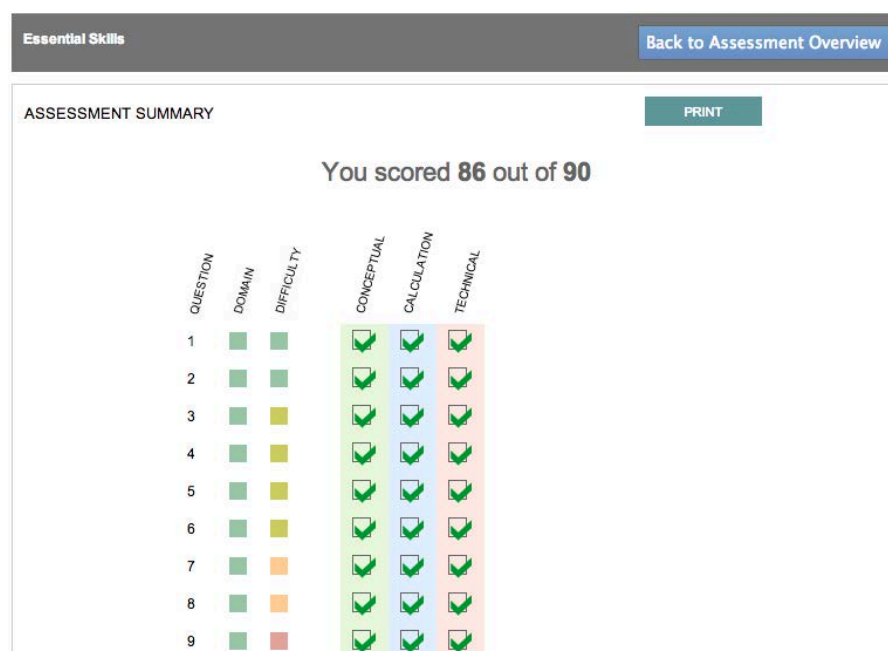


Figure 11 - Assessment Summary screen

Hover your mouse directly over a row to highlight a particular question and click to view the detailed feedback. The figure below illustrates the typical feedback format for an Essential Skills ADA injections question. Feedback for other medication domains (tablets and capsules, liquid medicines and IVIs) will follow a similar format.

QUESTION 29 - You answered this question INCORRECTLY

ROUTINELY SCHEDULED MEDICINES			DATE
MEDICINE (Approved Name)	Flucloxacillin	START DATE	21/2/2014
DOSE	0.5 g	ROUTE	I.V.
SPECIAL INSTRUCTIONS			12:00
DOCTOR'S SIGNATURE			Dr. Jones
			22:00

ADMINISTRATION TIMES: 06:00

Flucloxacillin 500 mg in 10 mL

CORRECT ANSWER

500 mg × 10 mL = 10 mL

500 mg

YOUR ANSWER

0.5 g × 10 mL = 10 mL

500 mg

Calculator feedback

Technical Measurement competence

Figure 12 - detailed feedback for an individual question

Note that there are 3 main components to the feedback for the question.

1. The top portion of the screen re-presents the key elements of the problem – i.e. the prescribed dose and the medication container label showing the dispensed dose and quantity/volume this is contained in.
2. The center portion of the screen shows the correct answer to the problem and includes problem setup (conceptual), calculation and technical measurement components.
3. The lower portion of the screen shows your answer to the problem and affords a discrete comparison with that of the correct solution above. For illustrative purposes the components of the answer have been highlighted to show how they relate to the components of the competence model.

If you've used a calculator to solve the problem, the keystrokes will be recorded in the calculator feedback section of the screen.

Note that in this example, the student has failed to convert the prescribed dose (0.5g) to the same SI unit of weight as the dispensed dose (500mg). Although the calculation and technical measurement components are correct, the student is still marked down as failure to convert to the dispensed SI unit increases the potential for error and is considered poor practice.

Your safeMedicate Modules

The *Modules* menu item opens a list of all the *safeMedicate* modules you have access to as in the figure below.

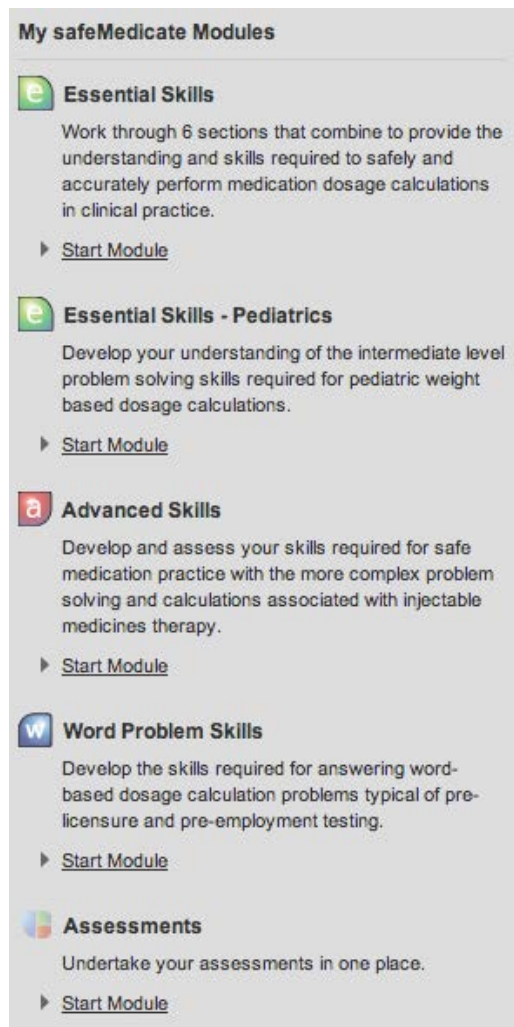


Figure 13- the My safeMedicate Modules menu item

In the above example, access is provided to the *Essential Skills*, *Essential Skills - Pediatrics*, *Advanced Skills*, *Word Problem Skills* and the *Assessments* module.

To open any module, click on the **Start Module** link associated with the module you wish to use.

Working with the Learning Modules

To open any module, click on the **Start Module** link associated with the module you wish to use. The module will open and content begin playing.

Page Navigation Tools

There are a number of tools available to help you navigate through and work with the module content as shown in the figure below.

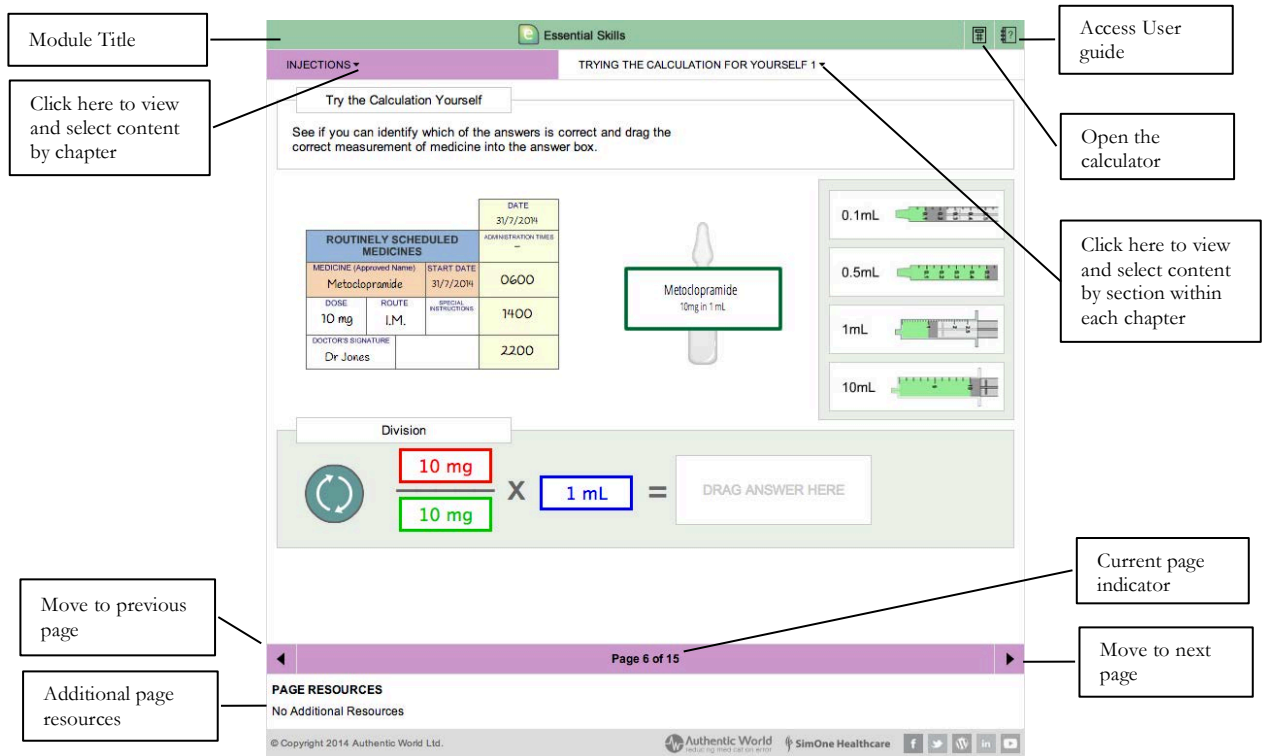


Figure 14 - the learning environment interface and page navigation tools

If there is additional content associated with the page, it will appear in the **Page Resources** section of the screen. Click on any resource to select and view additional content.

Media Playback Tools

Hover your mouse over the central part of the screen where the content plays to open a set of media playback tools as shown below.

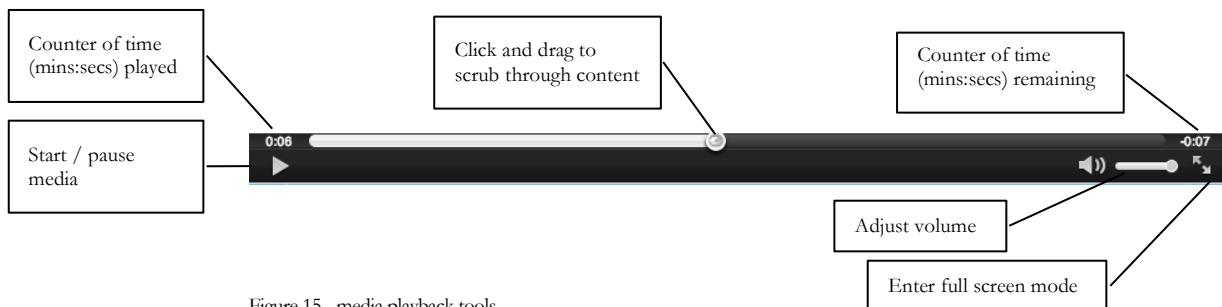


Figure 15 - media playback tools

Assessments

Working with the Assessments Module

In this version of *safeMedicate* all assessments scheduled by your university/institution are accessible and are taken via the **Assessments** module.

1. Click on **Modules** on the main menu.
2. On the drop down menu that opens, click on the **Start Module** link associated with the Assessments module (see Figure 13) to show the screen shown below.

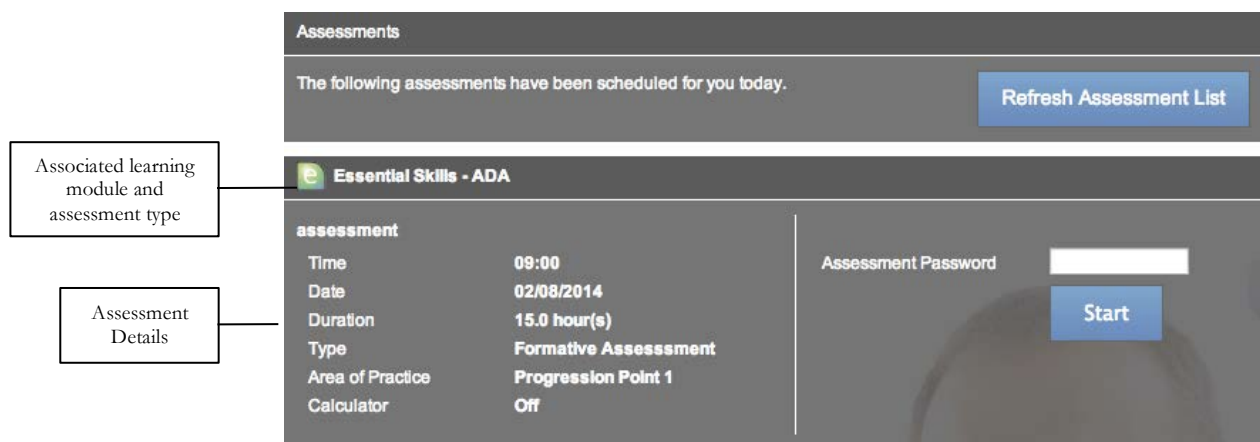


Figure 16 - viewing upcoming assessments

Any assessments that have been scheduled for you will be visible as in the example above.

The title bar of the assessment entry shows the associated learning module and type of assessment – in this example *Essential Skills ADA*.

The left side of the screen shows the details of the assessment including the date, time, duration, type (formative or summative), area of practice and whether an on-screen calculator will be available. **Note that you can only sit an assessment on the day and time it has been scheduled for.**

The right side of the screen is where you enter the **Assessment Password** – your instructor or local *safeMedicate* administrator will give this to you in advance of the assessment.

Please note that the safeMedicate Team do not set these passwords and you have to contact your university/institution if you do not have the password for any assessment that has been scheduled.

To start an assessment enter the Assessment Password and click **Start**.

Authentic Diagnostic Assessment (ADA) Problems

Essential Skills - ADA

This assessment will comprise of 40 questions.

- 10 questions from Tablets & Capsules.
- 10 questions from Liquid Medicines.
- 10 questions from Injections.
- 10 questions from I.V. Infusions.

For each question you will be required to correctly setup and calculate the equation and prepare the correct dosage to be administered.

If you do not complete the assessment within the time limit you will be allowed to complete the question you are currently working on. The assessment will then be saved.

Monday Evening		Rounding Requirements
Time	21:00	Tablets & Capsules: No Rounding Required.
Date	04/08/2014	Liquid Medicines & Injections: Answers greater than 1mL, round to 1 decimal place. Answers less than 1mL, round 2 decimal places.
Duration	2.0 hour(s)	I.V. Infusions: Answers rounded to the nearest whole number.
Type	Formative Assessment	
Area of Practice	Progression Point 1	
Calculator	On	

[Start Assessment](#) [Back to Assessment List](#)

Figure 17 - beginning a scheduled assessment

After submitting the correct assessment password you will see the screen shown above. This screen provides more detailed information about the assessment you are about to take and reminds you of any rounding requirements should calculated answers not be a whole number.

Click **Start Assessment** when you are ready to begin.

If the assessment includes IV infusion problems then you will be invited to choose the form of equation you prefer to work with as in the example below.

Click to select the one you wish to use.

This assessment includes I.V. infusion questions

Which equation would you like to use?

Drop Rate Denominator

You will need to be familiar with the Drop Rate Denominator method to use this calculation method.

Traditional

You will need to be familiar with the traditional extended method to use this calculation.

Figure 18 - equation options for IV infusion questions

Tablet and Capsules Questions

Time Remaining

Question position indicators

Time Remaining: 97 minutes
Question 1 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES				DATE
MEDICINE (Approved Name) Meprobamate				4/8/2014
DOSE 400 mg				ADMINISTRATION TIMES -
ROUTE ORAL		START DATE 4/8/2014		06:00
DOCTOR'S SIGNATURE Dr. Jones		SPECIAL INSTRUCTIONS -		14:00
				22:00

CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Carefully study the information above. Use the equation frame below to setup and calculate the correct dose. Click **NEXT** to continue.

400	mg	x	1	tab(s)	=	1	?	
400	mg							

RESET

NEXT

Figure 19 - answering an Authentic Diagnostic Assessment question (Tabs & Caps)

In the above example you will see that the numbered boxes at the top of the screen identify your position within the question sequence – in this example Question 1 of 40. Your time remaining to complete the assessment is shown in the title bar of the screen.

In this first step you are prompted to extract the relevant information from the prescription chart and medication product label – insert this information in the equation model by clicking on each text box in turn and typing in the numeric values as shown above.

Click the **?** symbol alongside each numeric value to reveal and select the correct measurement unit for each value as in the figure below.

Choose a measurement unit	g	mg	mcg	mL	L	tab(s)	cap(s)	unit(s)
---------------------------	---	----	-----	----	---	--------	--------	---------

Figure 20 - Measurement unit selector

Calculate your answer and enter the numeric value and the associated measurement unit in the boxes following the equals (=) sign.

Click **Next** to proceed.

The second step of a typical tablet and capsules question requires you to represent your answer by clicking on and dragging the correct number of tablets/capsules required into the medicine pot as in the example below.

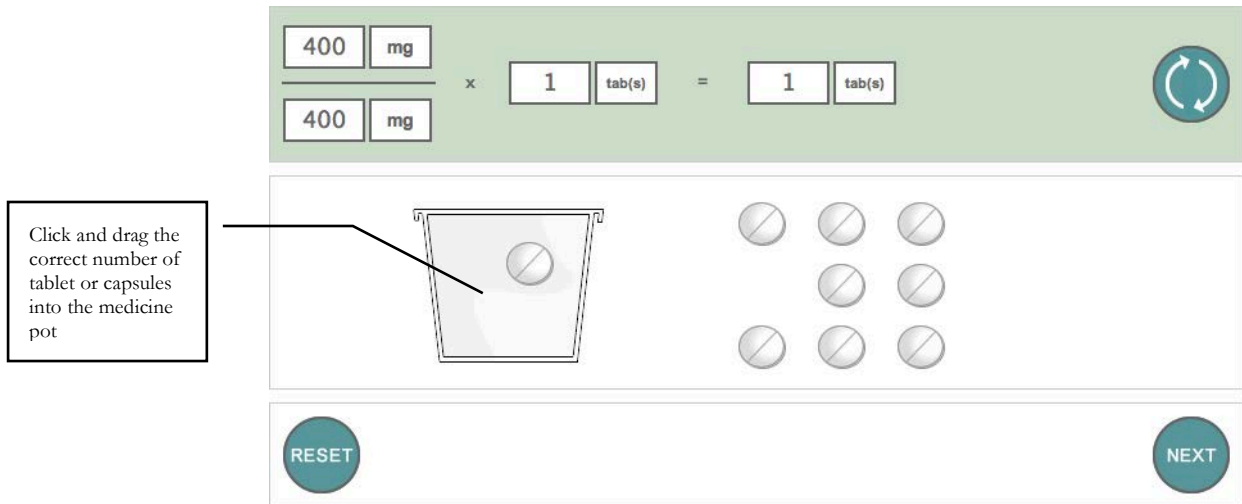


Figure 21 - representing your answer by dragging tablets to the medicine pot

If you make a mistake e.g. you drag in too many tablets, simply click on the **Reset** button to move the tablets back out of the medicine pot and try again.


When you are happy with your answer click on the **Next** button to proceed to the next question – note that as this is an assessment, you will not be told whether you are correct or otherwise until all questions have been answered.

Liquid Medicine Questions

Time Remaining: 78 minutes Question 13 of 40


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES			DATE 4/8/2014
MEDICINE (Approved Name) Ampicillin			ADMINISTRATION TIMES 06:00
DOSE 250 mg		ROUTE ORAL	START DATE 4/8/2014
DOCTOR'S SIGNATURE Dr. Jones		SPECIAL INSTRUCTIONS -	12:00
			18:00
			22:00



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Carefully study the information above. Use the equation frame below to setup and calculate the correct dose. Click **NEXT** to continue.

250	mg	x	5	mL	=	5	mL	
250	mg							




 RESET
 NEXT


Figure 22 - answering an Authentic Diagnostic Assessment question (Liquid Medicines)

In this first step you are prompted to extract the relevant information from the prescription chart and medication product label – insert this information in the equation model by clicking on each text box in turn and typing in the values as in the example.


Click the **?** symbol alongside each numeric value to reveal and select the correct measurement unit for each value (see Figure 20).


When ready, click on **Next** to continue.


250	mg	x	5	mL	=	5	mL	
250	mg							





Medicine Cup


0.5 mL 

1mL 

2mL 

5mL 

10mL 

20mL 


 NEXT

Figure 23 - selecting an appropriate measurement vehicle

The second step of a typical liquid medicine question requires you to select an appropriate method/vehicle with which to administer the dose. You have the choice of selecting a medicine pot or up to two oral syringes from the six available.

Select the vehicle of choice and click on **Next** to continue.

The third and final step of a typical liquid medicine question requires you to represent your answer as a volume of liquid in your chosen administration vehicle.

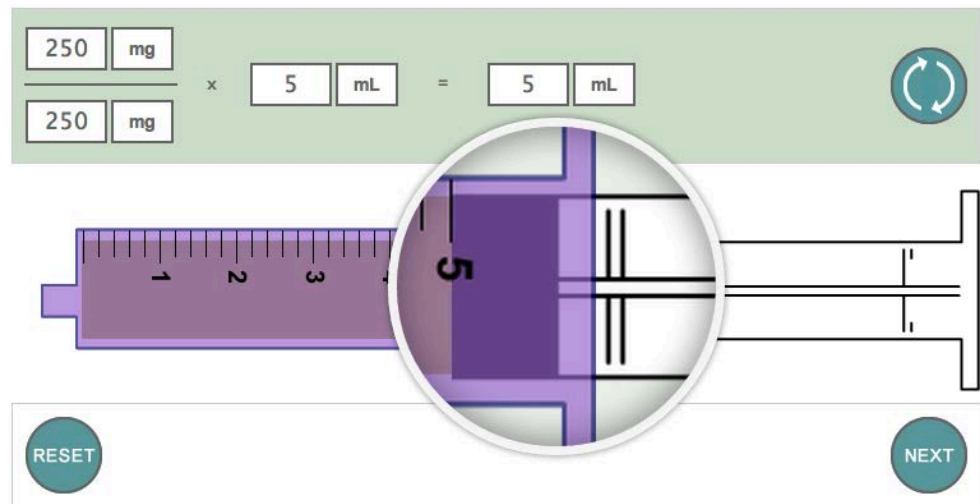


Figure 24 - measuring the correct dose using a syringe

Click on and drag the syringe plunger to the right until the desired volume of liquid medicine is drawn into the syringe – note how the syringe barrel is magnified to aid accurate measurement.

In the example above the 5 ml syringe was chosen and the answer represented by drawing the syringe to the **5 mL** graduation. (Please see the next section for how to represent your answer when using the medicine pot.)

When you are happy with your answer click on **Next** to continue to the next question.

Using the Medicine Cup

Time Remaining: 61 minutes Question 15 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES		DATE	4/8/2014
MEDICINE (Approved Name) Theophylline		ADMINISTRATION TIMES	-
START DATE		4/8/2014	06:00
DOSE	ROUTE	SPECIAL INSTRUCTIONS	14:00
180 mg	ORAL	-	
DOCTOR'S SIGNATURE			22:00
Dr. Jones			

DRAWING UP THE CORRECT VOLUME FOR ADMINISTRATION

Choose an appropriate syringe and draw up your calculated dose for administration.
Click **NEXT** when you are ready to continue.

Medicine Cup

NEXT

Figure 25 - selecting an appropriate measurement vehicle (Medicine cup example)

The above example shows a question that involves choosing a medicine cup as opposed to a syringe.

Click on the Medicine Cup and then on **Next** to proceed.

Click and drag the arrow until the correct volume is shown in the medicine pot

RESET **NEXT**

Figure 26 - measuring the correct volume using the medicine cup

To fill the medicine cup, click and drag the grey arrow until the dotted line represents the correct volume as in the example above.

Click **Next** when you are done.


Note that as this is an assessment, you will not be told whether you are correct or otherwise until all questions have been answered.

Injection Questions

Time Remaining: 236 minutes Question 24 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40


AS REQUIRED MEDICINES		
MEDICINE (Approved Name) Morphine Sulphate		START DATE 5/8/2014
DOSE 5 mg	ROUTE S.C.	FREQUENCY -
DOCTOR'S SIGNATURE Dr. Jones		



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Carefully study the information above. Use the equation frame below to setup and calculate the correct dose.
Click **NEXT** to continue.

5	mg	x	1	mL	=	0.5	mg
10	mg						



RESET

NEXT

Figure 27 - answering an Authentic Diagnostic Assessment question (Injections)

In this first step you are prompted to extract the relevant information from the prescription chart and medication product label – insert this information in the equation model by clicking on each box in turn and typing in the numerical values.

Click the **?** symbol alongside each numeric value to reveal and select the correct measurement unit for each value (see Figure 20).

Calculate your answer and type that in and select the appropriate measurement units.

When ready, click on **Next** to continue.

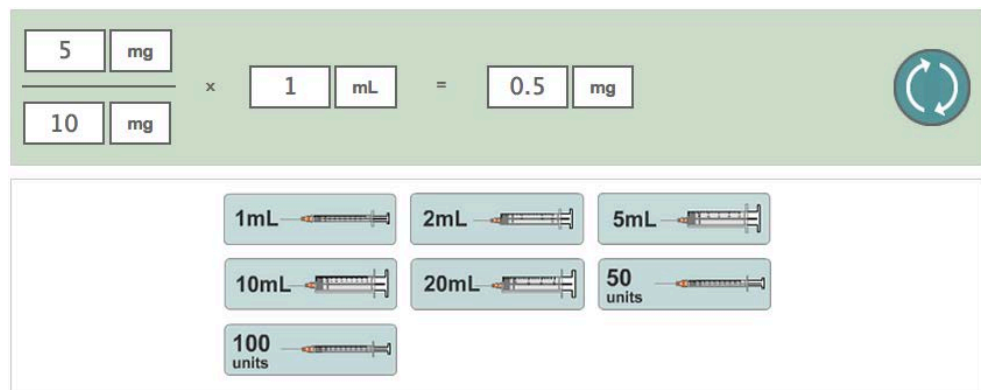


Figure 28 - selecting an appropriate measurement vehicle

The second step of a typical injections question requires you to select an appropriately sized syringe with which to administer the dose. Note that you have the choice of selecting one of seven syringes.

Click on the syringe of choice to continue.

The third and final step of a typical injections question requires you to represent your answer as a volume of liquid in your chosen syringe.

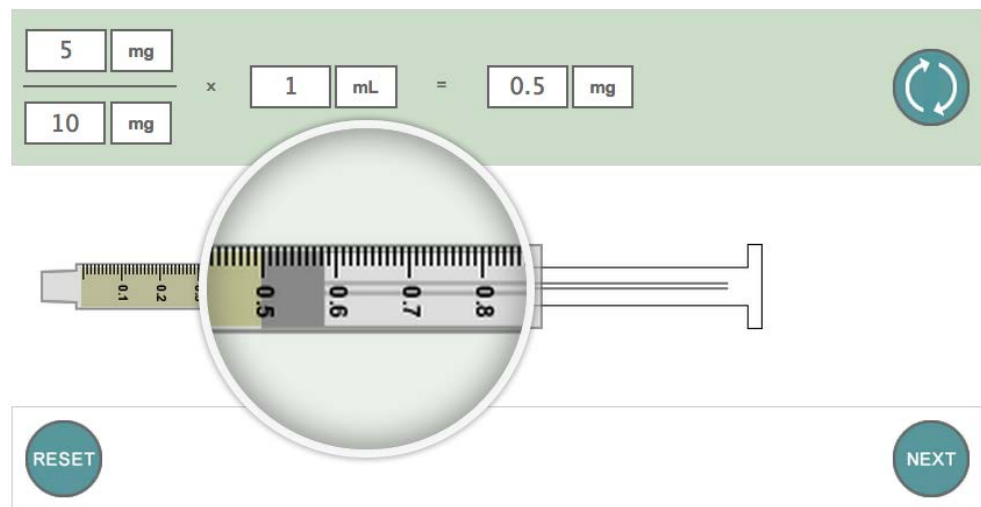


Figure 29 - measuring the correct dose using a syringe

Click on and drag the syringe plunger to the right until the desired volume of liquid is drawn into the syringe – note how the syringe barrel is magnified to aid accurate measurement.

When you are happy with your answer click on **Next** to proceed to the next question.

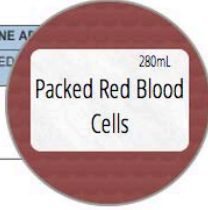
You will not be told whether you are correct or otherwise until all questions have been answered.

Intravenous Infusion Questions (Drop Rate Denominator Method)

Time Remaining: 195 minutes Question 31 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

INFUSION FLUID			INFUSION DURATION or RATE	MEDICINE APPROVED NAME
TYPE/STRENGTH	VOLUME	ROUTE		
Packed Red Blood Cells	280 mL	I.V.	4 hour(s)	



I.V. Administration Set
15 drops / mL

CALCULATING ML/HR

Carefully study the information above. Use the equation frame below to setup and calculate the mL/hr. Click **NEXT** to continue.

280	mL	=	70	mL/hr
4	hour(s)			

RESET
NEXT

Figure 30 - answering an Authentic Diagnostic Assessment question (IVIs)

Solving an IVI assessment question using the drop rate denominator (DRD) method typically involves a two-stage process.

In this first stage you are required to calculate the volume of fluid to be infused per hour i.e. the hourly rate. The first step requires you to extract the relevant information from the prescription chart and intravenous fluid container – insert this information in the equation model by clicking on each box in turn and typing in the values as in the example.

Click the **?** symbol alongside each numeric value to reveal and select the correct measurement unit for each value (see Figure 20).

When ready, click on **Next** to continue.

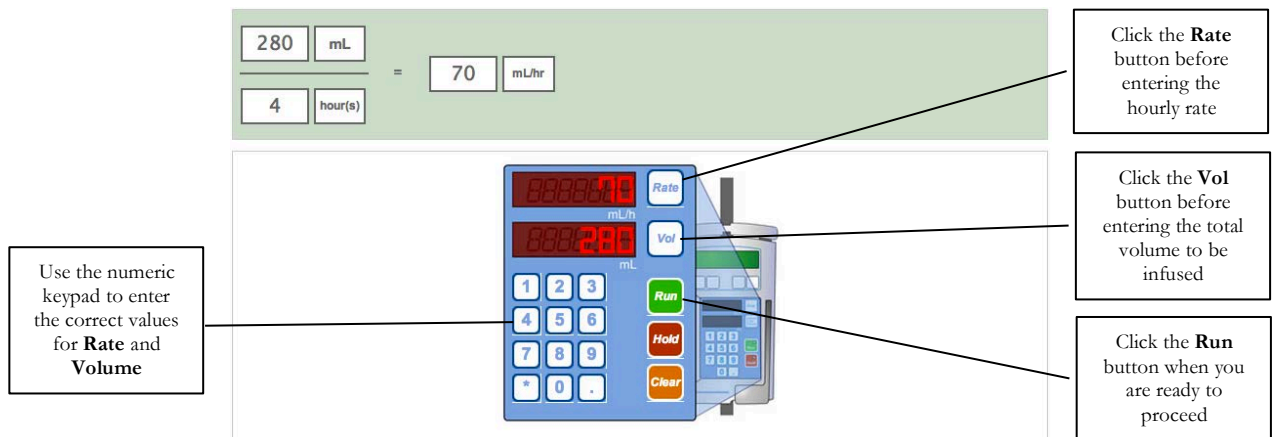


Figure 31 – representing your answer as mL./hour

In this next step you are required to represent the hourly rate and total infusion volume on a volumetric infusion pump. The above example shows how 280mL of fluid over 4 hours duration is represented.

To enter the hourly rate value on the pump click on the **Rate** button then click on the appropriate number keys to represent your answer (70 in the above example).

To enter the total volume to be infused on the pump click on the **Vol** button then click on the appropriate number keys to represent your answer.

When you are happy with your answer click on the **Run** button to proceed to the next stage of the problem.

CALCULATING DROPS PER MINUTE

Carefully study the information above. Use the equation frame below to setup and calculate the drops per minute. Click **NEXT** to continue.

<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">280</td><td style="text-align: center;">mL</td></tr> <tr><td colspan="2" style="text-align: center;">=</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">hour(s)</td></tr> </table>	280	mL	=		4	hour(s)	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">70</td><td style="text-align: center;">mL/hr</td></tr> </table>	70	mL/hr		<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">70</td><td style="text-align: center;">mL/hr</td></tr> <tr><td colspan="2" style="text-align: center;">=</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">D.R.D.</td></tr> </table>	70	mL/hr	=		4	D.R.D.	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">18</td><td style="text-align: center;">drops / min</td></tr> </table>	18	drops / min
280	mL																			
=																				
4	hour(s)																			
70	mL/hr																			
70	mL/hr																			
=																				
4	D.R.D.																			
18	drops / min																			

RESET

NEXT

Figure 32 – calculating the drops per minute using the DRD method

In this second stage you are required to calculate the number of drops per minute required if you were to deliver this fluid via an IV administration set. Note that your hourly rate ‘answer’ is carried over from stage 1.

You now have to set up the calculation based upon this hourly rate and the drop rate denominator appropriate to the number of drops per mL that the administration set delivers (15 in this example).

Enter the correct numeric values and select the appropriate measurement units for each. Note that you should round the answer up or down depending on the decimal value (round up for .5 and above).

When you are happy with your answer click on **Next** to proceed to the next step.

280 mL / 4 hour(s) = 70 mL/hr

70 mL/hr / 4 D.R.D. = 18 drops/min

Click and drag the wheel on the flow control to set the correct drops per minute rate

18 drops/min

RESET NEXT

Figure 33 - representing your answer as drops per minute via an IV administration set

In this last step you are required to represent your answer as drops per minute by adjusting the administration set accordingly.

Click on the wheel of the fluid control mechanism and drag up or down to so that your answer is represented in the drops/min box (18 in the example).

When you are happy with your answer click on **Next** to proceed to the next question.

You will not be told whether you are correct or otherwise until all questions have been answered.

Intravenous Infusion Questions (Traditional Method)

Question 1 of 10

1 2 3 4 5 6 7 8 9 10

INFUSION FLUID			INFUSION DURATION or RATE	MEDICINE APPROVED NAME
TYPE/STRENGTH	VOLUME	ROUTE		
Packed Red Blood Cells	280 mL	I.V.	2 hour(s)	

280mL

Packed Red Blood Cells

I.V. Administration Set
15 drops / mL

CALCULATING ML/HR

Carefully study the information above. Use the equation frame below to setup and calculate the mL/hr.
Click **NEXT** to continue.

280	mL	=	140	mL/hr
2	hour(s)			

RESET

NEXT

Figure 34 - answering an Authentic Diagnostic Assessment question (IVIs)

Solving an IVI assessment question using the traditional or extended formula method typically involves a two-stage process.

In this first stage you are required to calculate the volume of fluid to be infused per hour i.e. the hourly rate. The first step requires you to extract the relevant information from the prescription chart and intravenous fluid container – insert this information in the equation model by clicking on each box in turn and typing in the values as in the example.

Click the **?** symbol alongside each numeric value to reveal and select the correct measurement unit for each value (see Figure 20).

When ready, click on **Next** to continue.



Figure 35 – representing your answer as ml/hour

In this next step you are required to represent the hourly rate and total infusion volume on a volumetric infusion pump. The above example shows how 280mL of fluid over 2 hours duration is represented.

To enter the hourly rate value on the pump click on the **Rate** button then click on the appropriate number keys to represent your answer (140 in the above example).

To enter the total volume to be infused on the pump click on the **Vol** button then click on the appropriate number keys to represent your answer.

When you are happy with your answer click on the **Run** button to proceed to the next stage of the problem.

CALCULATING DROPS PER MINUTE

Carefully study the information above. Use the equation frame below to setup and calculate the drops per minute. Click **NEXT** to continue.

$$\frac{280 \text{ mL}}{2 \text{ hour(s)}} \times \frac{15 \text{ drops/mL}}{60 \text{ min/hr}} = 35 \text{ drops/min}$$

RESET NEXT

Figure 36 – calculating the drops/min using the traditional (extended formula) method

In this second stage you are required to calculate the number of drops per minute required if you were to deliver this fluid via an IV administration set.

The traditional or extended formula method is based upon four factors – the total volume to be infused (280mL), the duration of the infusion (2 hours), the drop

factor of the IV administration set (15 drops/mL) and the number of minutes in an hour (60 min/hour). The equation is set up as in the example above.

First, multiply the two numerators: $280 \times 15 = 4200$

Second, multiply the 2 denominators: $2 \times 60 = 120$

Next, divide the first answer (4200) by the second (120): $4200/120 = 35$

This gives the drops per minute rate.

The screenshot shows a digital interface for medication calculation. At the top, a math problem is displayed: $\frac{280 \text{ mL} \times 15 \text{ drops/mL}}{2 \text{ hour(s)} \times 60 \text{ min/hr}} = 35 \text{ drops/min}$. Below the math is a diagram of an IV administration set, including a blue roller and a drip chamber. A box next to the drip chamber displays the calculated rate: 35 drops/min . At the bottom of the interface are two circular buttons labeled "RESET" and "NEXT".

Figure 37 – representing your answer as drops per minute via an IV administration set

In this last step you are required to represent your answer as drops per minute by adjusting the administration set accordingly.

Click on the wheel of the fluid control mechanism and drag up or down to so that your answer is represented in the drops/min box (35 in the example).

When you are happy with your answer click on **Next** to proceed to the next question.

You will not be told whether you are correct or otherwise until all questions have been answered.

Completing the Assessment

When all questions have been answered you will be told that the exercise is complete and offered the opportunity to review any questions before finishing the assessment – this provides an opportunity to check your answers or to retry any question you might have been unhappy with.

Using Review Mode

Click on the small box that represents the question number to enter review mode.

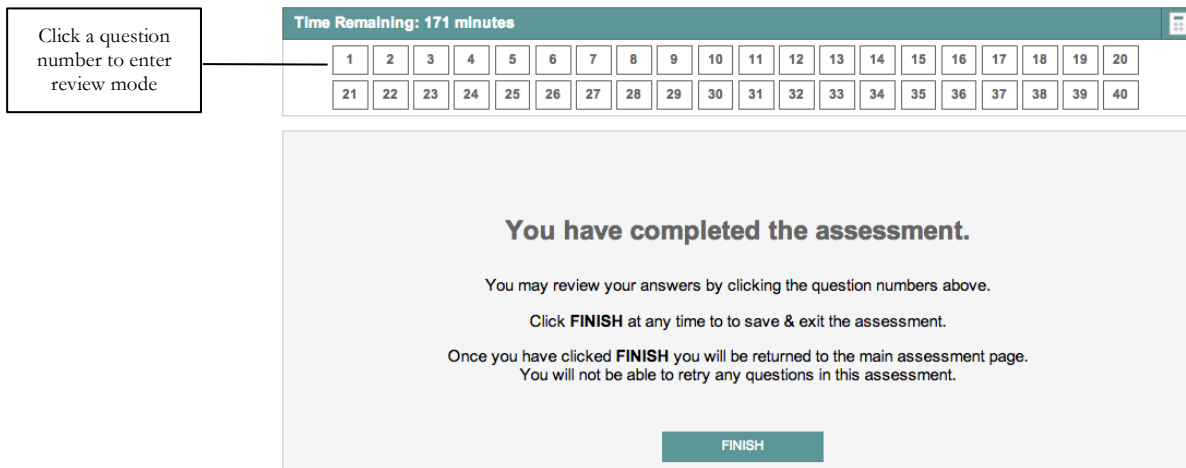


Figure 38 - completing the assessment and being invited to review any questions

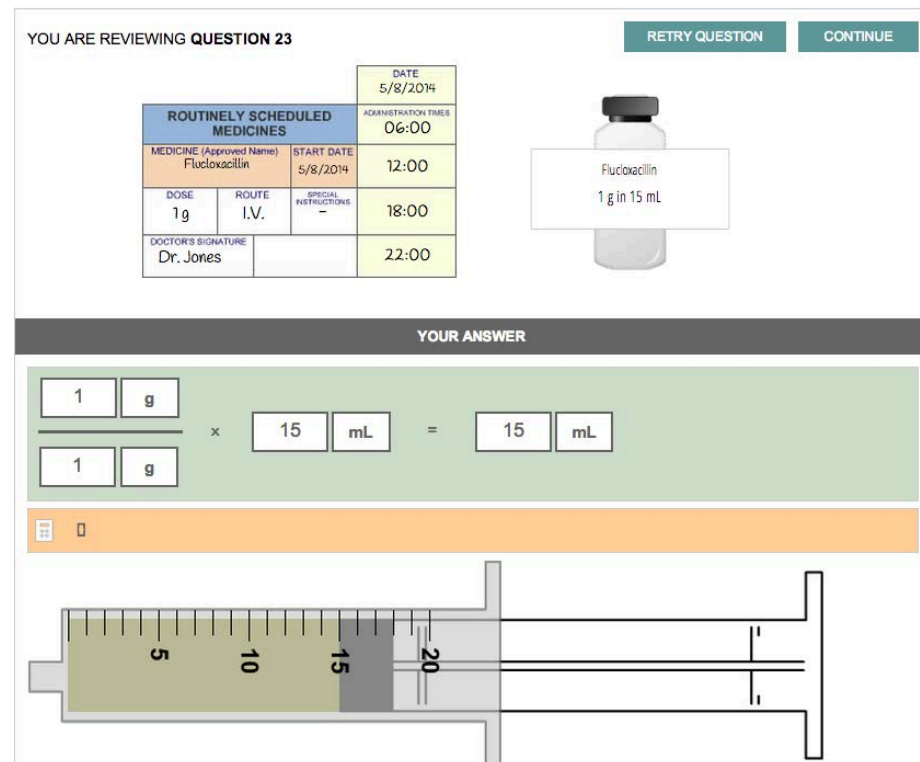


Figure 39 - Reviewing an assessment question

In the above example we have chosen to review Question 23 - note that the question is re-presented and beneath is your solution to the problem.

If you wish to change this answer then click on the **Retry Question** button – you will need to redo the entire question.

If you are happy with your answer then click on the **Continue** button to move on.

Ending the Assessment

Once you have finished reviewing any questions click **Finish** (see Fig. 33).

You will be returned to the main assessment page and you will not be able to retry any further questions in this assessment.

Authentic Assessment (AA) Problems

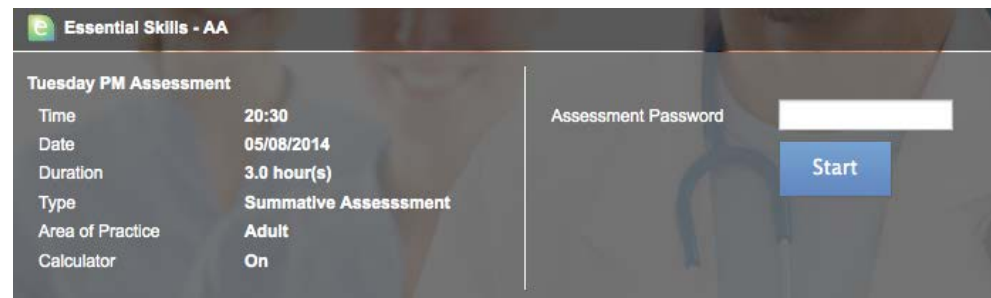


Figure 40 - beginning the assessment

Launch the **Assessments** module as described in the previous section of this guide. Any assessments scheduled for you will be listed as in the example above.

Enter the assessment password and click **Start**.

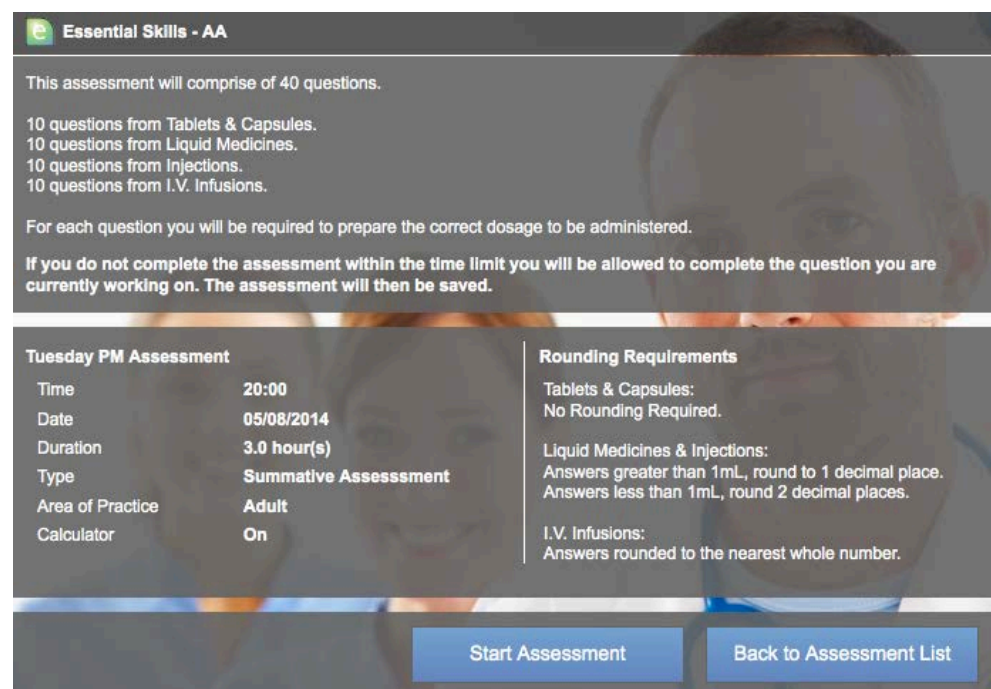


Figure 41 - details of the assessment

The next screen provides an overview of the assessment format. Click **Start Assessment** when you are ready to begin.

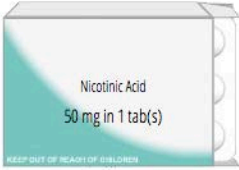
A typical Authentic Assessment question requires you to extract the relevant information from the medication prescription and medication product label and calculate the answer. You are not required to show how to set up the problem in an equation. All that is required is a final answer. Your instructor will inform you whether you are able to use pencil and paper or a calculator to assist you.

Tablets and Capsules Questions

Time Remaining: 179 minutes Question 3 of 40


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES		DATE 5/8/2014	ADMINISTRATION TIMES -
MEDICINE (Approved Name) Nicotinic Acid	START DATE 5/8/2014	06:00	
DOSE 150 mg	ROUTE ORAL	SPECIAL INSTRUCTIONS -	14:00
DOCTOR'S SIGNATURE Dr. Jones		22:00	



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Using whichever method you are most comfortable with, calculate and place into the pot the correct number of tablets / capsules to administer to the patient.
Click **NEXT** to continue.



RESET

NEXT

Figure 42 - answering an Authentic Assessment problem (tablets and capsules)

Using the information available to you on the prescription chart and medication container label, calculate the dose to be administered.

Represent the amount of medication that should be administered by clicking on and dragging the correct number of tablets/capsules required into the medicine cup as in the example above.

Click the **Reset** button if you need to change your answer.


When you are happy with your answer, click the **Next** button to proceed to the next question.

Liquid Medicines Problems

Time Remaining: 172 minutes Question 12 of 40


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES			DATE	5/8/2014
			ADMINISTRATION TIMES	-
MEDICINE (Approved Name)	Amoxicillin		START DATE	5/8/2014
DOSE	125 mg	ROUTE	ORAL	SPECIAL INSTRUCTIONS
				14:00
DOCTOR'S SIGNATURE			Dr. Jones	22:00





CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION


Using whichever method you are most comfortable with, calculate the required volume for administration and choose a suitable delivery method below with which to draw up the medication.
Click **NEXT** to continue.





Medicine Cup


0.5 mL 

1mL 

2mL 

5mL 

10mL 

20mL 

NEXT

Figure 43 - answering an Authentic Assessment problem (Liquid Medicines)

Using the information available to you on the prescription chart and medication container label, calculate the dose to be administered.

Click to choose the most appropriate vehicle with which to administer the dose. You have the choice of selecting a medicine pot or from a range of oral syringes.

Note that you may select up to two oral syringes if this will assist you to make an accurate measurement.

Select the vehicle of choice and click **Next**.

The second step of a typical liquid medicine question requires you to represent your answer as a volume of liquid in the chosen administration vehicle – in this case a 5 mL syringe.

			DATE 5/8/2014
ROUTINELY SCHEDULED MEDICINES			ADMINISTRATION TIMES -
MEDICINE (Approved Name) Amoxicillin	START DATE 5/8/2014		06:00
DOSE 125 mg	ROUTE ORAL	SPECIAL INSTRUCTIONS -	14:00
DOCTOR'S SIGNATURE Dr. Jones			22:00



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Using whichever method you are most comfortable with, calculate the required volume for administration and choose a suitable delivery method below with which to draw up the medication.
Click **NEXT** to continue.

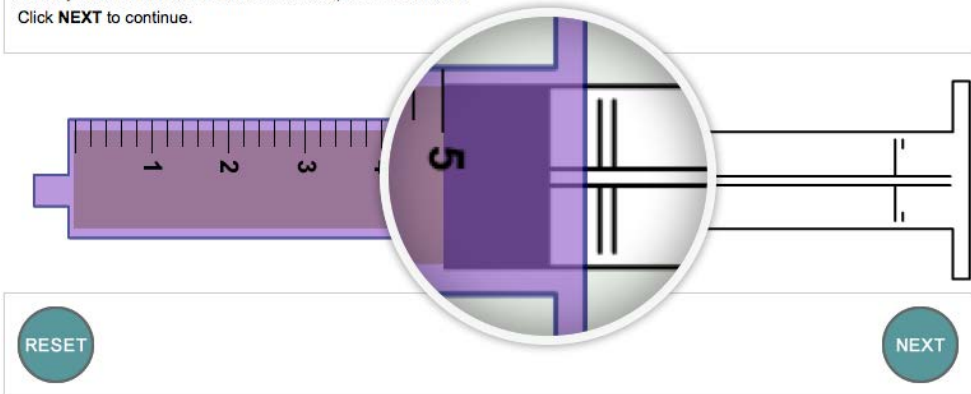


Figure 44 - representing your answer in an oral syringe

Click on the syringe plunger and drag to the right until the syringe is filled with the correct volume of medication. Note how the syringe barrel is magnified as you drag to aid accurate measurement.

When you are satisfied with your answer click the **Next** button to proceed to the next question.

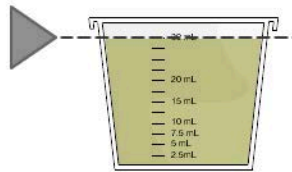
Using the Medicine Cup

		DATE 5/8/2014
ROUTINELY SCHEDULED MEDICINES		ADMINISTRATION TIMES -
MEDICINE (Approved Name) Mefenamic Acid		START DATE 5/8/2014
DOSE 300 mg	ROUTE ORAL	SPECIAL INSTRUCTIONS -
DOCTOR'S SIGNATURE Dr. Jones		14:00
		22:00



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Using whichever method you are most comfortable with, calculate the required volume for administration and choose a suitable delivery method below with which to draw up the medication.
Click **NEXT** to continue.








Figure 45 - representing your answer in a medicine cup

To represent your answer as a volume of liquid in the Medicine Cup, click on and drag the grey arrow to the required level on the medicine cup.


Click the **Next** button when you are satisfied with your answer and you will proceed to the next question.

Injection Questions

Time Remaining: 149 minutes Question 24 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

ROUTINELY SCHEDULED MEDICINES			DATE 5/8/2014
			ADMINISTRATION TIMES -
MEDICINE (Approved Name) Cefuroxime	START DATE 5/8/2014	06:00	
DOSE 500 mg	ROUTE I.V.	SPECIAL INSTRUCTIONS -	14:00
DOCTOR'S SIGNATURE Dr. Jones		22:00	



Cefuroxime
750 mg in 6 mL

CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Using whichever method you are most comfortable with, calculate the required volume for administration and choose a suitable delivery method below with which to draw up the medication.
Click **NEXT** to continue.








1mL 	2mL 	5mL 
10mL 	20mL 	50 units 
100 units 		

Figure 46 - answering an injections question

Using the information available to you on the prescription chart and medication container label, calculate the dose to be administered.


Click to choose the most appropriate syringe with which to administer the dose. You have a choice of seven syringes.

The second step of an injection question requires you to represent your answer as a volume of liquid in your chosen syringe.

Click on the syringe plunger and drag to the right until the syringe is filled with the correct volume of medication. Note how the syringe barrel is magnified as you drag to aid accurate measurement (see figure below).

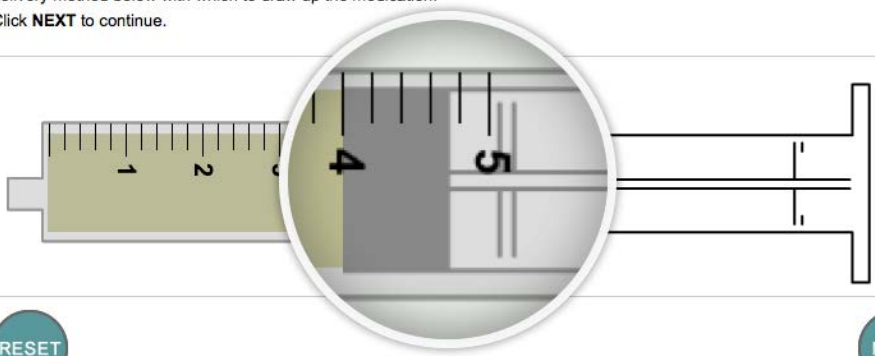
When you are satisfied with your answer, click **Next** to proceed to the next question.

			DATE 5/8/2014
ROUTINELY SCHEDULED MEDICINES			ADMINISTRATION TIMES
MEDICINE (Approved Name) Cefuroxime		START DATE 5/8/2014	06:00
DOSE 500 mg	ROUTE I.V.	SPECIAL INSTRUCTIONS -	14:00
DOCTOR'S SIGNATURE Dr. Jones			22:00



CALCULATING THE REQUIRED DOSE FOR ADMINISTRATION

Using whichever method you are most comfortable with, calculate the required volume for administration and choose a suitable delivery method below with which to draw up the medication.
Click **NEXT** to continue.



RESET **NEXT**

Figure 47 - representing your answer in your chosen syringe

Intravenous Infusion Questions

Time Remaining: 140 minutes Question 31 of 40

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

INFUSION FLUID			INFUSION DURATION or RATE	MEDICINE APPROVED NAME
TYPE/STRENGTH	VOLUME	ROUTE		
Glucose 5%	1000 mL	I.V.	12 hour(s)	

1000mL
Glucose 5%

I.V. Administration Set
12 drops / mL

CALCULATING ML/HR

Using whichever method you are most comfortable with, calculate the correct mL/hr and set the pump.
Click **RUN** on the pump to continue.



Figure 48 – representing your answer as mL./hour using an IV infusion pump

Using the information available to you on the prescription chart and medication container label, calculate the dose to be administered.

Represent your answer by correctly setting the volumetric pump to deliver the dose. Enter the hourly rate value on the pump by clicking the **Rate** button and then clicking the appropriate number keys to represent the answer (83 in the above example).

After entering the rate, enter the total volume to be infused on the pump by clicking the **Vol** button and then clicking the appropriate number keys to represent the answer (1000 in the above example).

When you are satisfied with your answer, click on the **Run** button to proceed to the next step.

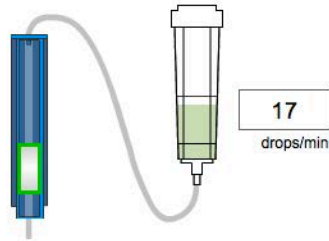
INFUSION FLUID			INFUSION DURATION or RATE	MEDICINE APPROVED NAME
TYPE/STRENGTH	VOLUME	ROUTE		
Glucose 5%	1000 mL	I.V.	12 hour(s)	

1000mL
Glucose 5%

I.V. Administration Set
12 drops / mL

SETTING THE GIVING SET

Using whichever method you are most comfortable with calculate the drops per minute and set the giving set correctly. Click **NEXT** to continue.



RESET

NEXT

Figure 49 - representing your answer using an IV administration set

In the final step, you are required to represent your answer as drops per minute by adjusting the flow control on the IV administration set.

Click the “wheel” of the fluid control mechanism and drag the wheel up or down until the desired answer is shown in the **drops/min** box.

When you are satisfied with the answer, click the **Next** button to proceed to the next question.

Completing the Assessment

When all questions have been answered you will be told that the exercise is complete and offered the opportunity to review any questions before finishing the assessment – this provides an opportunity to check your answers or to retry any question you might have been unhappy with.

Using Review Mode

Click on the small box that represents the question number to enter review mode.

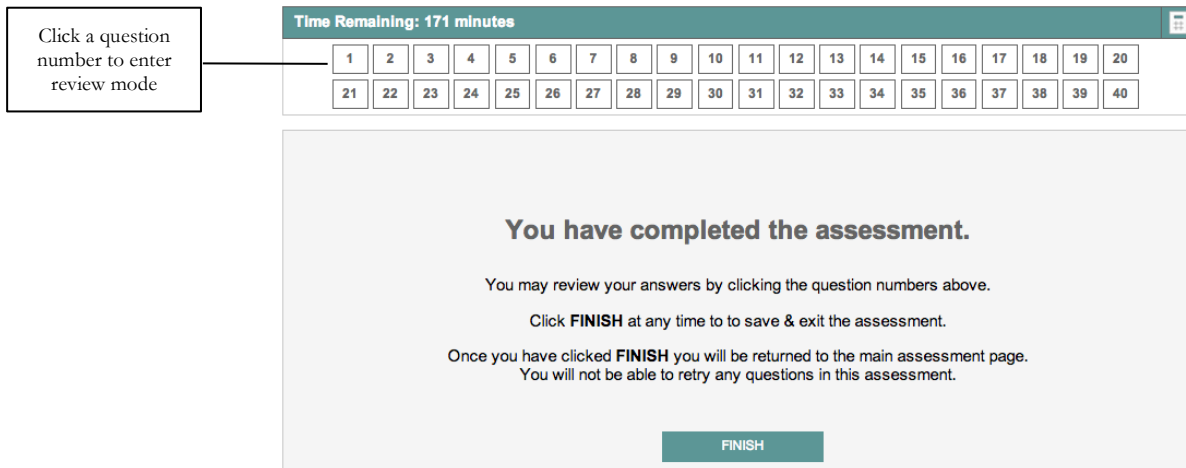


Figure 50 - completing the assessment and being invited to review any questions

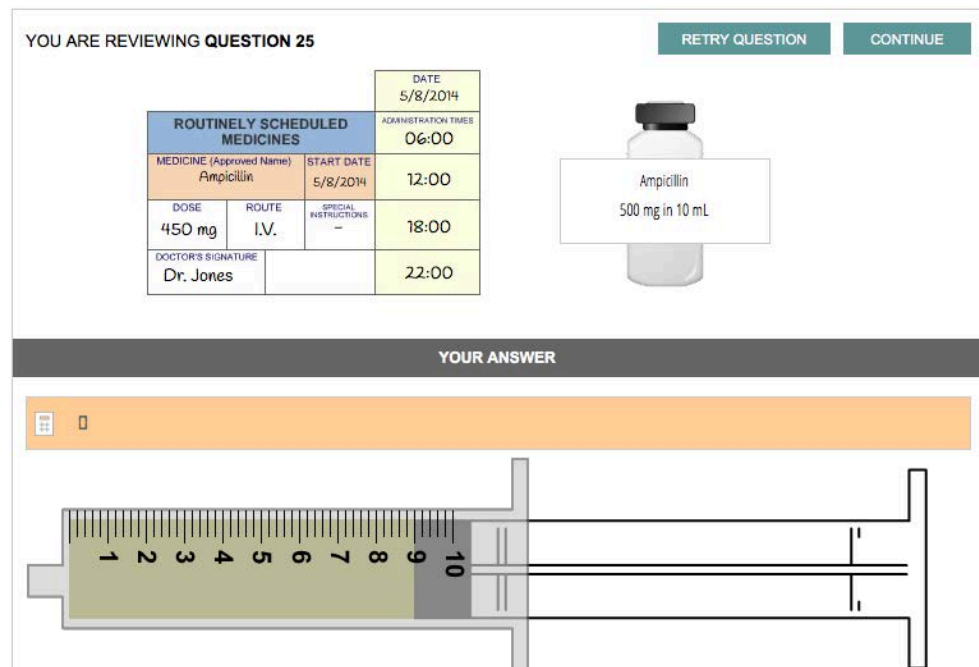


Figure 51 – using Review Mode to retry a question

In the above example we have chosen to review Question 25 - note that the question is re-presented and beneath is your solution to the problem.

If you wish to change this answer then click on the **Retry Question** button – you will need to redo the entire question.

If you are happy with your answer then click on the **Continue** button to move on.

Ending the Assessment

Once you have finished reviewing any questions click **Finish** (see Fig. 33).

You will be returned to the main assessment page and you will not be able to retry any further questions in this assessment.

Your Account Settings

Hovering your mouse over the **Account Settings** menu item will open a sub menu comprising three options:

1. Your Details
2. Module Access
3. Terms and Conditions

Your Details

The **Your Details** menu item will show your basic contact details and course related information as shown in the example below.

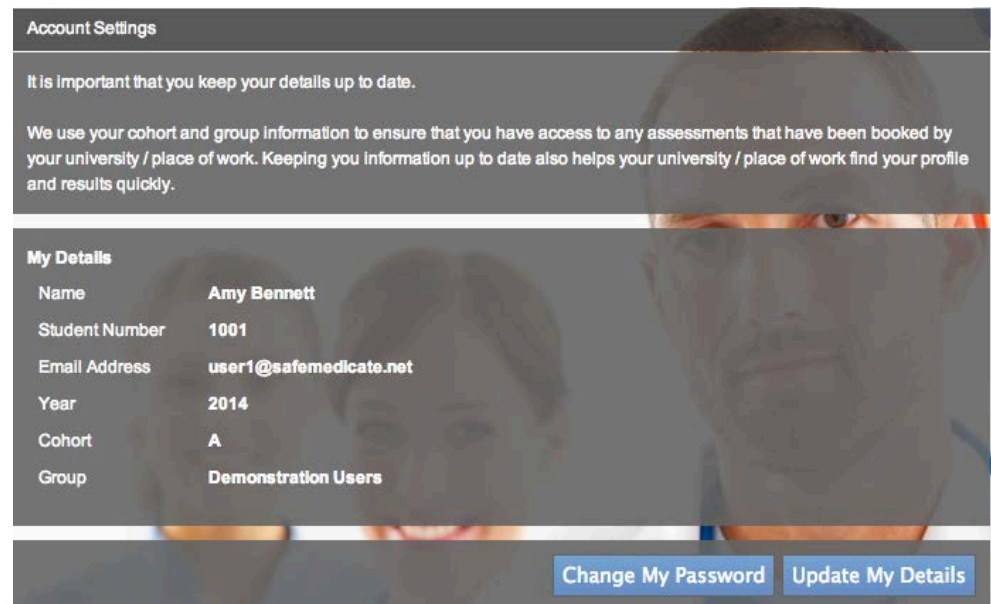


Figure 52 - Account Settings | Your Details

Changing Your Password

1. Click on the **Change My Password** button to open the dialog shown below.



Figure 53 - the Change My Password dialog

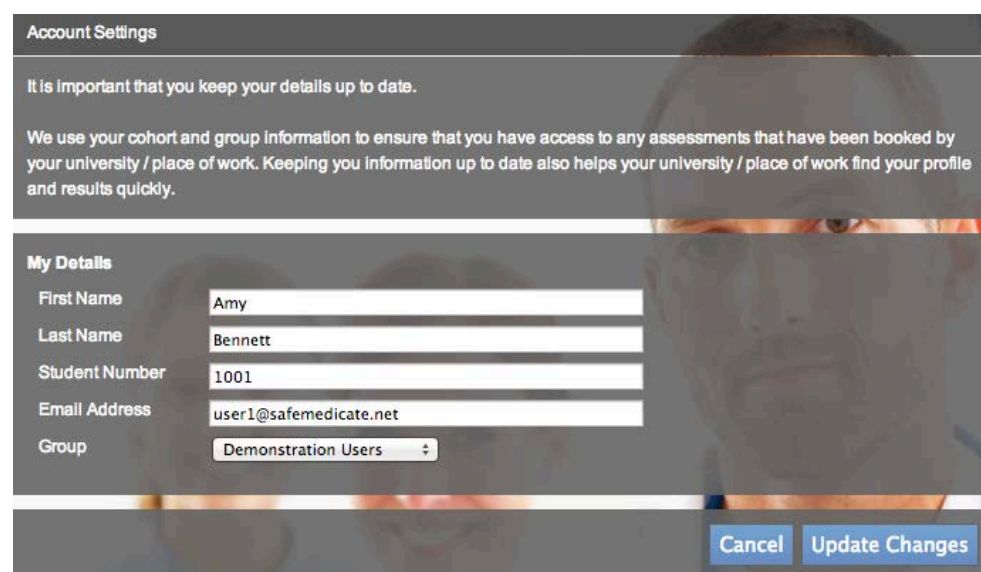
2. Enter your current password.

3. Enter your new password.
4. Enter your new password a second time to confirm.
5. Click on **Change My Password** to complete the action.

Editing Your User Details

Click **Update My Details** (see Figure 16) to open the dialog shown below to make changes to your user record. Please keep this information up-to-date as it's important for your university/hospital in terms of ensuring they can find your profile and assessment results easily.

Make any necessary changes and click **Update Changes** to complete the action.



The screenshot shows a dialog box titled "Account Settings". At the top, it says "It is important that you keep your details up to date." Below this, a paragraph explains that cohort and group information is used for access to assessments and for university/hospital identification. The main section is titled "My Details" and contains a form with the following fields:

First Name	Amy
Last Name	Bennett
Student Number	1001
Email Address	user1@safemedicate.net
Group	Demonstration Users

At the bottom right of the dialog, there are two buttons: "Cancel" and "Update Changes".

Figure 54 - the Edit User Details dialog

Note: Only change your group allocation if asked to do so by your instructor or administrator. If you are not associated with the correct group you will not be able to sit any assessments that have been scheduled for you.

Module Access

The **Module Access** menu item lists your *safeMedicate* modules and their expiration dates as in the example below.

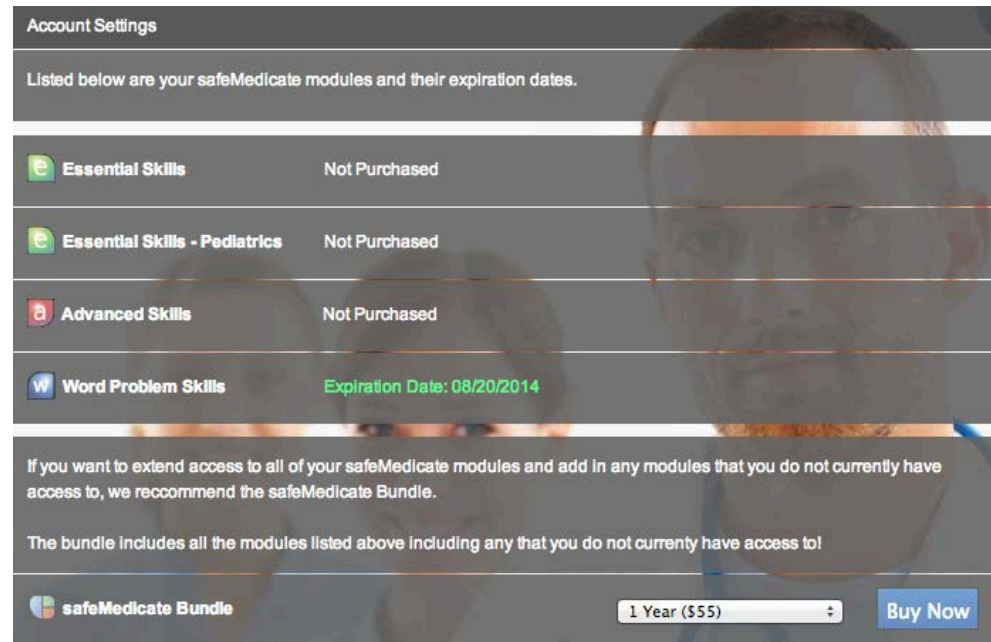


Figure 55 – Account Settings | Module Access page

If you need to extend access to your *safeMedicate* account then you can make an in-app purchase of the **safeMedicate Bundle** that comprises all modules.

1. Use the list box to select a time period (e.g. 1 year) for the new licence.
2. Click on **Buy Now**.
3. You will be taken to the secure **PayPal** payment screen to complete your purchase. You can choose to pay using your PayPal account or with any major debit or credit card.

Terms and Conditions

The **Terms and Conditions** menu item will open the screen shown below.

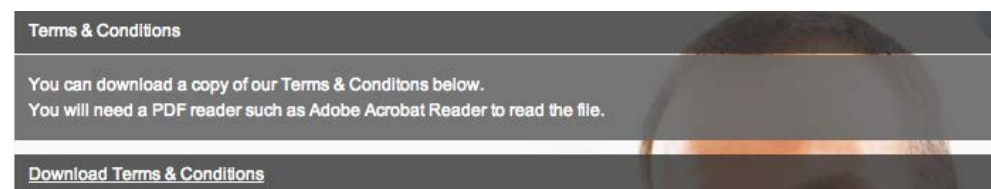


Figure 56 - Account Settings | Terms and Conditions

Click the **Download Terms & Conditions** link to download a copy of our *End User Terms and Conditions* in PDF format.

Getting Help When You Need It

Hovering your mouse over the **Support** menu item will open a sub menu comprising two options:

1. Local Administrator
2. safeMedicate Support

Contacting your Local Administrator

The Local Administrator is the person within your university/organization that you should contact for support in the first instance. Click on the **Local Administrator** menu item to show the figure below.

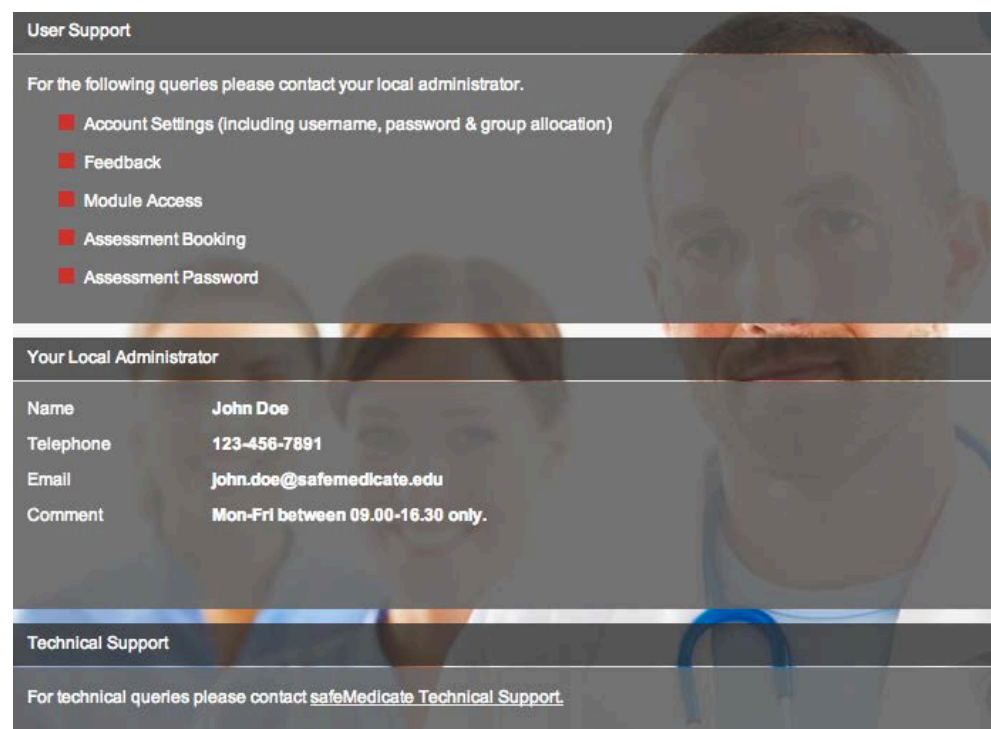


Figure 57 - the User Support page

The top section of the screen shows a list of the typical things that you should contact your Local Administrator about.

The contact details for your Local Administrator should be visible in the central section of the screen.

The lower section of the screen provides direct access to the *safeMedicate Technical Support* services as described below.

Contacting safeMedicate Technical Support

If you are experiencing technical problems, we provide direct access to our Knowledge Base and the opportunity to submit a Support Ticket.

Click on the **safeMedicate Support** menu item to open the dialog shown below.

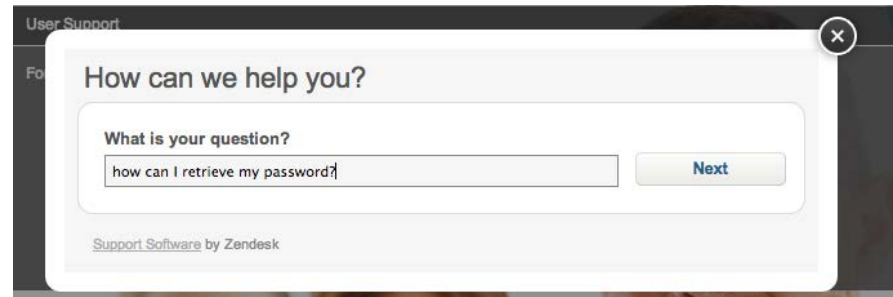


Figure 58 – contacting safeMedicate Technical Support

Please try and describe your problem as best you can – this will assist our intelligent search function to scan our *Knowledge Base* to try and provide an immediate answer.

Type in your question and click **Next**.

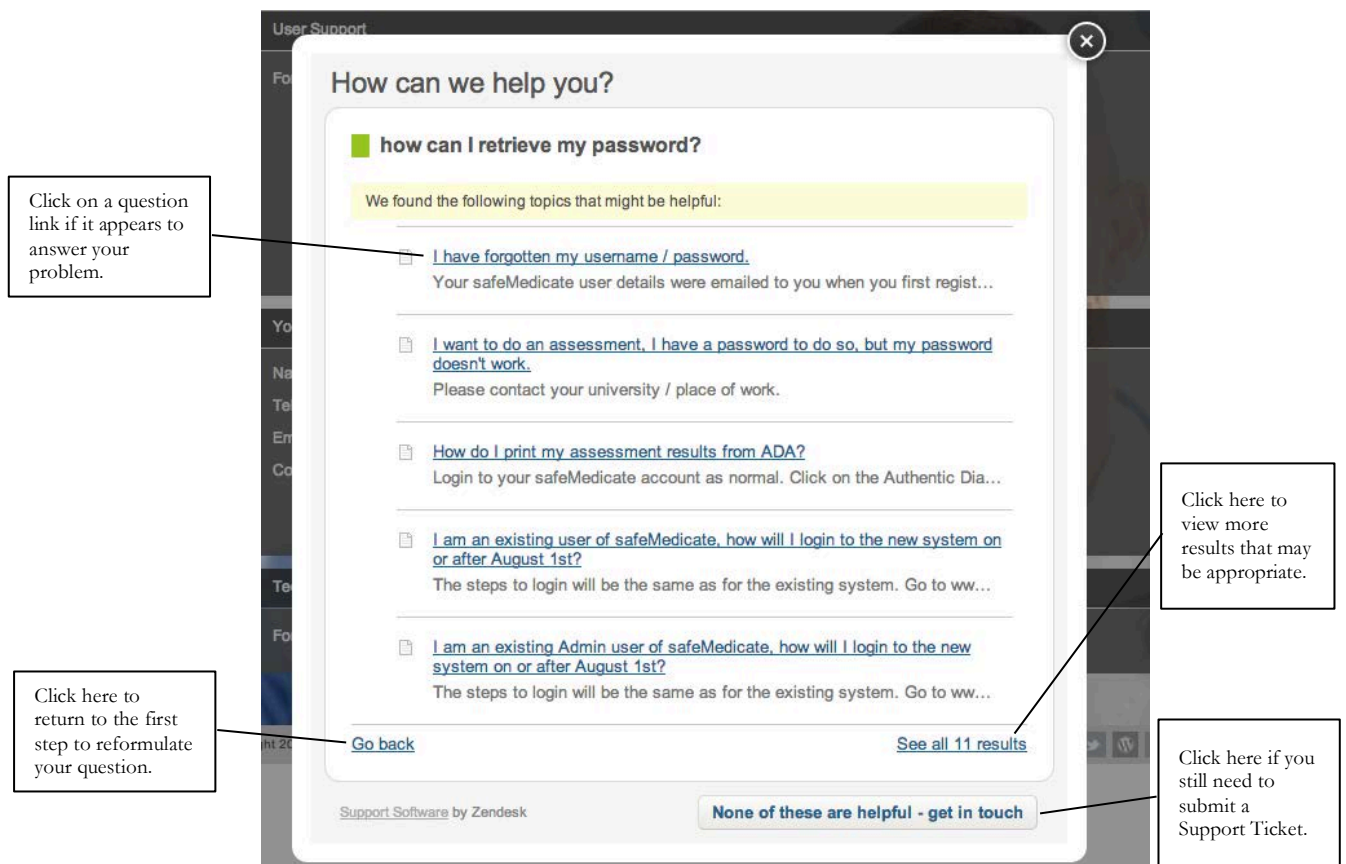


Figure 59 - searching the Knowledge Base for an answer

The figure above shows a typical list of entries from our Knowledge Base that may provide an immediate answer to your query.

If an answer appears to address your problem click on the question link to access our *Knowledge Base* in a separate browser window/tab and view the answer as shown below.

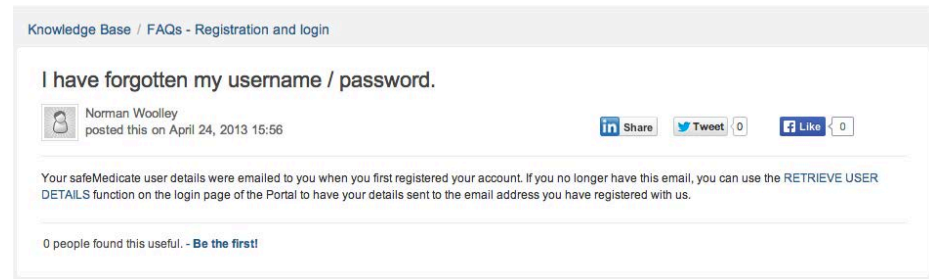


Figure 60 - Knowledge Base entry that answers problem posed

If none of the listed answers appear to address your problem then click the button at the bottom right of the dialog - **None of these are helpful – get in touch**. This will open another dialog shown below.

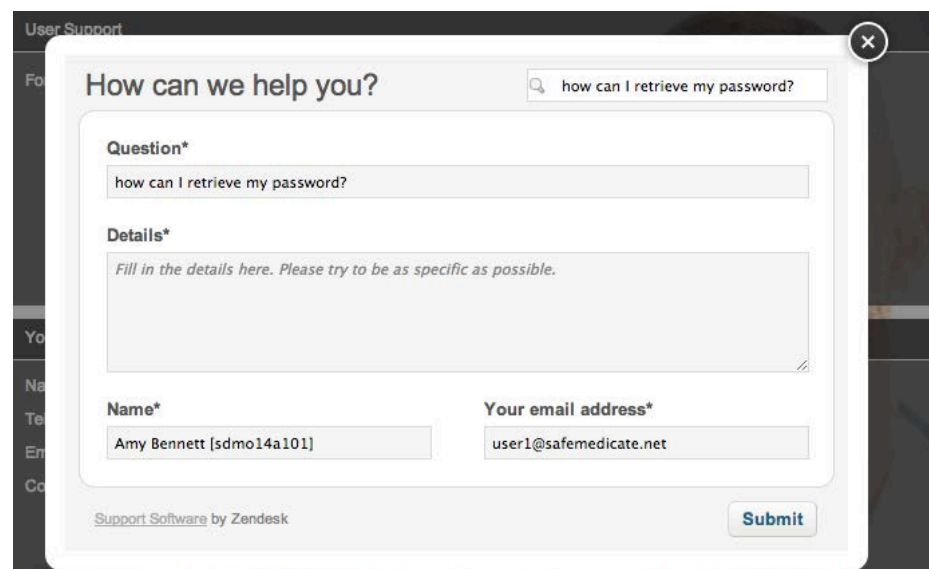


Figure 61 - providing additional details to submit a Support Ticket

Note that your original question, name [username] and email address have already been entered for you. Use the **Details** box to provide us with as much information as you can about the problem. For example, what were you trying to do? / what actually happened? / did you receive an error message?

When you have entered the details click **Submit**. Our Technical Support Team will be alerted to your Support Ticket and will be in touch with you shortly via email.

Please note that our customer support Help Desk operates **between 09.00–17.00 on Monday to Friday only**. This may result in a delay to your query being answered depending on the day/time it is submitted.