

Calculate with Confidence.



eDose[®]

Drug Dosage Calculation Software
Authentic Assessment
User Guide

Statement on Cognitive Competence Development

Where the terms 'competence' or 'competency' are used within eDose 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.

¹European 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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Before You Start

eDose® provides a range of tools and features designed to optimize your learning experience.

The eDose software program is a web-hosted application and therefore accessible from any computer with an Internet connection. We recommend that you consider the following before you begin.

Save Your Results

Always exit the Authentic Assessment program using the **Log Out** button so your results may be saved. Any other method of quitting the program causes your results and your progress to be lost.

Consult the Getting Started Guide

Should you have trouble logging in or navigating through the Authentic Assessment (AA) program, consult the Getting Started Guide accessible through the **Help** menu.

The eDose Cognitive Competence Model

eDose 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:

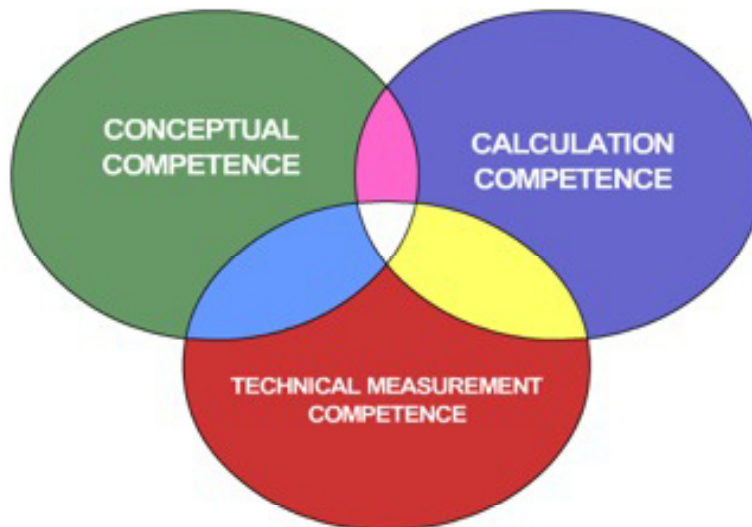


Figure 1: The eDose Cognitive Competence Model

- **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.

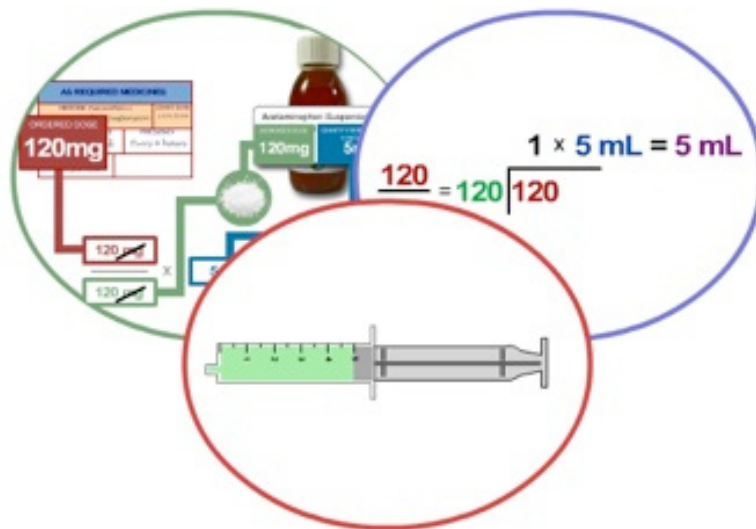


Figure 2: The Three Competence Elements of a Liquid Medicines Dosage Problem

The figure below shows how the eDose cognitive competence model locates within the base layer of the METI Hierarchy for Learning.

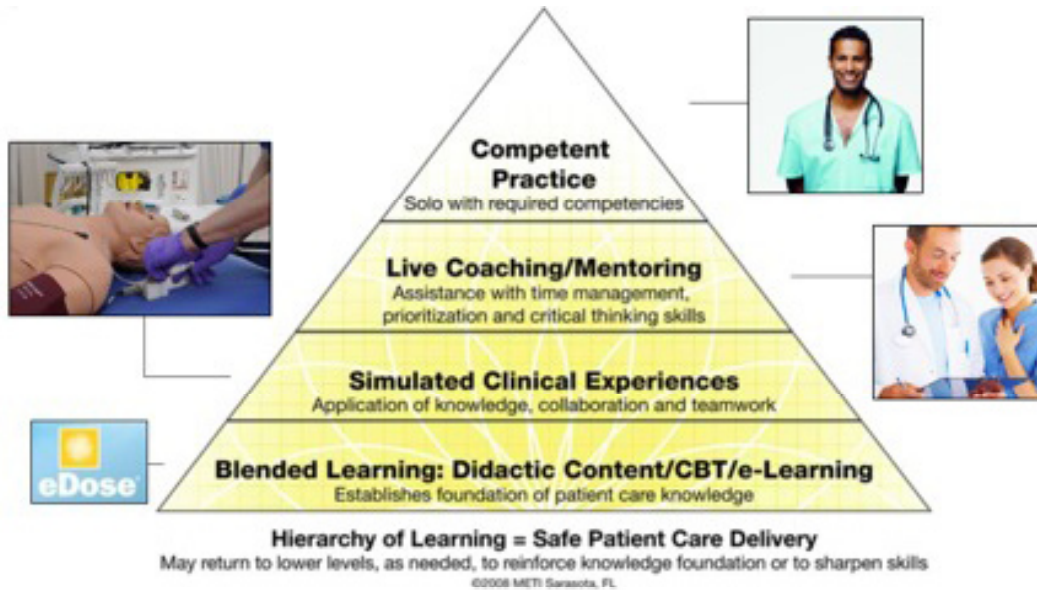


Figure 3: The METI Hierarchy for Learning

eDose 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 METI 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.

Authentic Assessment (AA)

The Authentic Assessment (AA) program is launched via the eDose Home page.

Locate the Authentic Assessment module listed on the home page and click the **START** link.

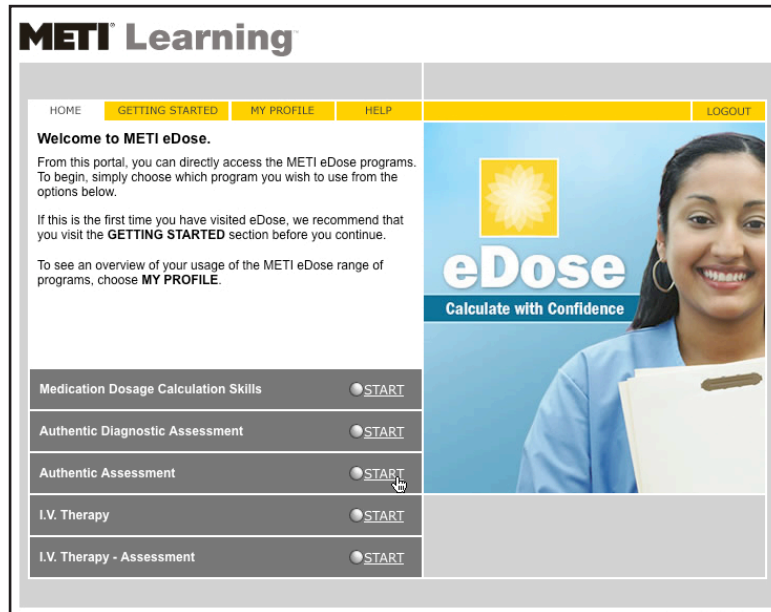


Figure 4: Selecting Authentic Assessment on the eDose Home Page

When you launch AA, a new web browser window appears.

To optimize your learning experience within AA, we recommend you view it using the Full Screen mode of your browser. If using Internet Explorer or the Firefox browser on a PC, enter Full Screen mode by pressing the F11 function key on your keyboard (pressing F11 a second time will return you to the usual windowed mode of operation). For other web browsers, please check the help file associated with the program if you are not familiar with using the Full Screen mode.

The AA program may also be launched using the link on the My Profile page.

The AA Main Menu

The AA Main Menu provides access to all areas of the system.

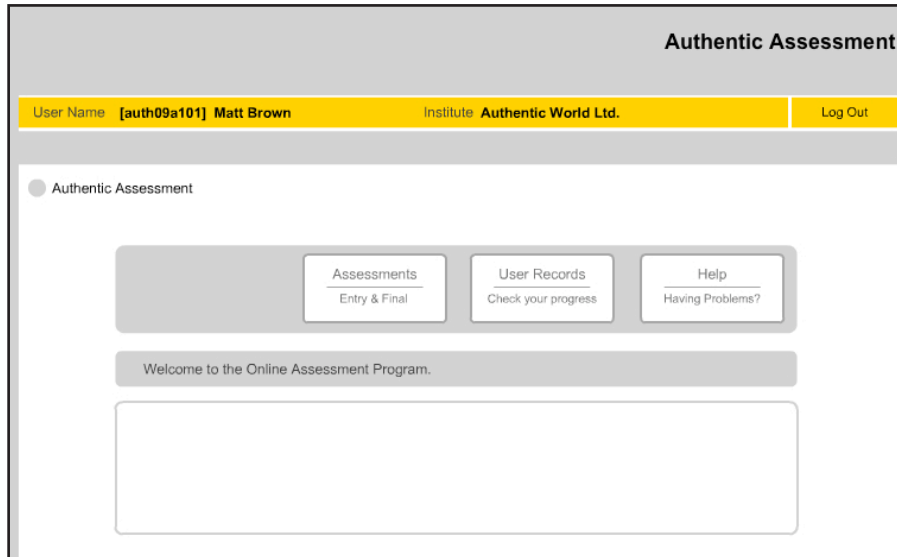


Figure 5: The AA Main Menu

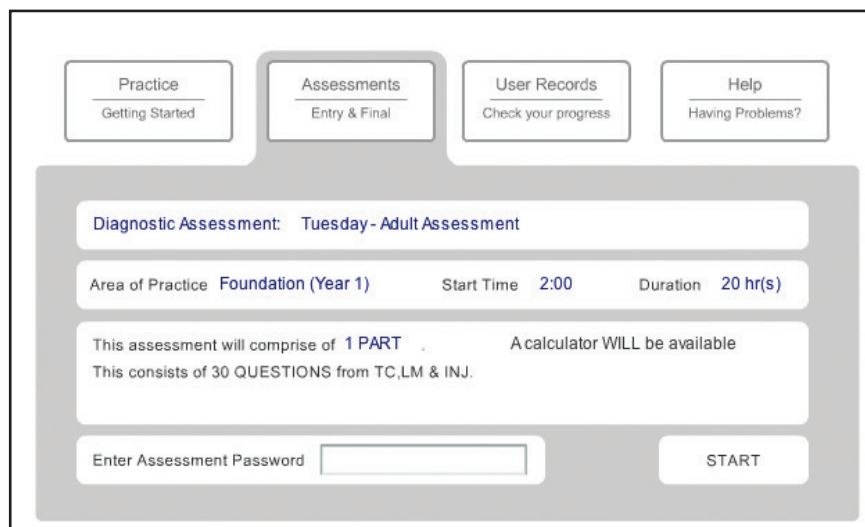
There are three options available on the Main Menu:

- **Assessments** - take an assessment at a date and time determined by your instructor
- **User Records** - find detailed records of your assessments and feedback on your performance
- **Help** - obtain online help for using various aspects of the system

A **Log Out** button appears on this screen and remains available for when you choose to exit the system. You should always exit the system using the **Log Out** button to ensure your progress and performance data are saved.

Assessments

Selecting the **Assessments** option provides you with an opportunity to take an assessment if one is scheduled for the current date and time.



The screenshot shows the 'Assessments' screen with the following elements:

- Navigation tabs: Practice (Getting Started), **Assessments** (Entry & Final), User Records (Check your progress), and Help (Having Problems?).
- Assessment Title: Diagnostic Assessment: Tuesday - Adult Assessment
- Area of Practice: Foundation (Year 1)
- Start Time: 2:00
- Duration: 20 hr(s)
- Assessment Details: This assessment will comprise of 1 PART. A calculator WILL be available. This consists of 30 QUESTIONS from TC, LM & INJ.
- Input field: Enter Assessment Password
- Button: START

Figure 6: The Assessments Screen

An assessment is available **ONLY** if one has been scheduled by the system administrator.

Typically, you will be told of the date, start time and duration of any assessment. The assessment becomes available **ONLY** at the date/time indicated and becomes unavailable again once the set duration has elapsed.

In addition to the name of the assessment, the Assessments screen includes information on:

- The selected **Area of Practice**
- The assigned start time
- The duration allotted to the assessment
- The number of parts the assessment comprises (typically one or two parts)
- The number of questions to be answered and abbreviations for their medication domains (i.e. TC for tablets and capsules, LM for Liquid Medicines, INJ for Injections and IV for Intravenous Infusions)
- Whether an on-screen calculator will be available

You are required to enter the **Assessment Password** in the field at the bottom before you can begin. This is typically provided to you by your course tutor, clinical manager or administrator just prior to the assessment.

Once the password is entered, click the **START** button.

An assessment start screen appears.

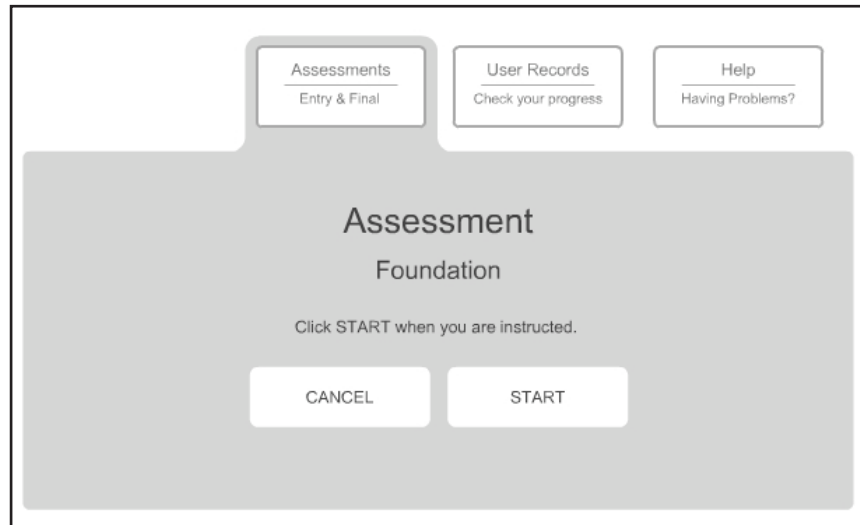


Figure 7: Starting an Assessment

Click **START** to begin the assessment.

Taking an Assessment

A typical Authentic Assessment question requires you to extract the relevant information from the medication order 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 to assist you.

Assessments can only be taken ONCE. Typically, students are given a specified amount of time to complete the assessment by their instructors. Throughout the assessment, you are provided a bar with the question numbers that displays your progress.

Using the Calculator

An on-screen calculator may be available for some questions if the instructor chooses to make the calculator accessible.

When a calculator is available, a **Calculator** button appears in the upper right corner of the question.

Click the **Calculator** button to open the on-screen calculator.

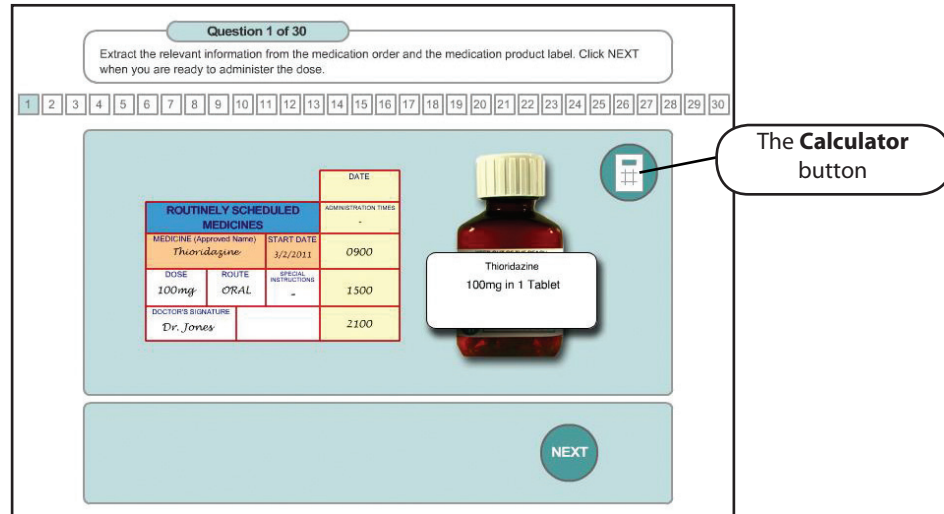


Figure 8: The Calculator Button

The calculator appears.

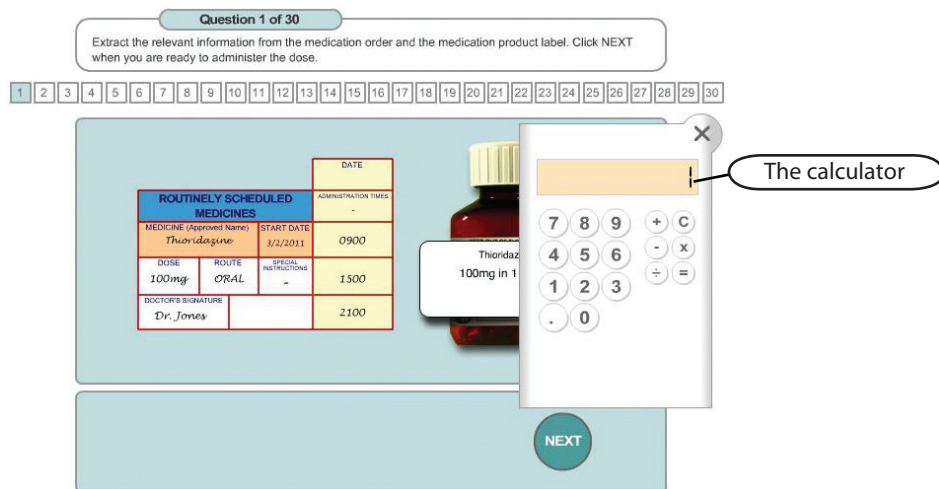


Figure 9: The Calculator

To use the calculator, click the number and operator buttons.

Tablets & Capsules Questions

Tablets & Capsules questions are presented in two steps.

Question 3 of 30

Extract the relevant information from the medication order and the medication product label. Click NEXT when you are ready to administer the dose.

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

ROUTINELY SCHEDULED MEDICINES			DATE
MEDICINE (Approved Name)	START DATE	ADMINISTRATION TIMES	0900
Hydroxyzine	2/20/2019	1300	
DOSE	ROUTE	SPECIAL INSTRUCTIONS	1700
50mg	ORAL	-	2100
DOCTOR'S SIGNATURE	Dr. Jones		

Hydroxyzine
50mg in 1 Tablet

NEXT

Figure 10: The First Step of a Typical Tablets & Capsules Question

In the first step you are prompted to extract the relevant information from the medication order and medication product label.

When ready, click the **NEXT** button.

The second step appears.

Question 3 of 30

Drag the correct dosage into the medicine pot, then click DONE.

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

BACK DONE

Figure 11: The Second Step of a Typical Tablets & Capsules Question

The second step of a typical Tablets and Capsules question requires you to 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.

Click the **BACK** button if you need to review the medication order and medication product label.

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

Liquid Medicine Questions

Liquid Medicine questions are presented in two steps.

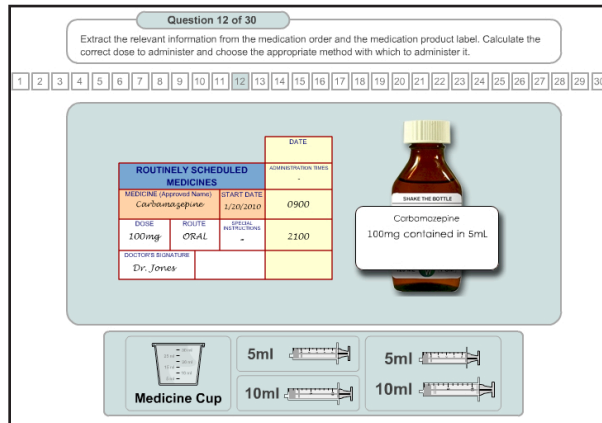


Figure 12: The First Step of a Typical Liquid Medicine Question

In the first step you are prompted to extract the relevant information from the medication order and medication product label and choose the appropriate method by which to administer the medication. You have the choice of selecting a medicine cup, a 5 mL syringe, a 10 mL syringe, or both a 5 mL and 10 mL syringe together.

Click on the method of choice.

The second step appears.

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.

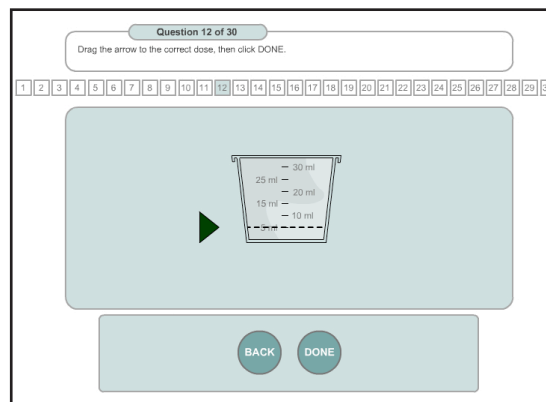


Figure 13: The Second Step of a Typical Liquid Medicine Question

In the example above, the liquid medicine cup was chosen (see the section that follows on injections for an example of representing the answer using a syringe). To represent your answer as a volume of liquid, click on and drag the green arrow to the required level on the medicine cup.

When you are satisfied with your answer click the **DONE** button.

The medicine cup “fills” to the chosen volume before the screen changes to display the next question.

Injection Questions

Injection questions are presented in two steps.

Question 21 of 30

Extract the relevant information from the medication order and the medication product label. Calculate the correct dose to administer and choose the appropriate syringe with which to administer it.

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

AS REQUIRED MEDICINES		
MEDICINE (Approved Name)		
Hydromorphone Hydrochloride		
DOSE	ROUTE	START DATE
3mg	I.V.	1/20/2010
FREQUENCY		DOCTOR'S SIGNATURE
Every 4 hours PRN		Dr. Jones

Hydromorphone Hydrochloride
3mg in 1mL

1ml 5ml 20ml 50 units/ml
3ml 10ml 100 units/ml

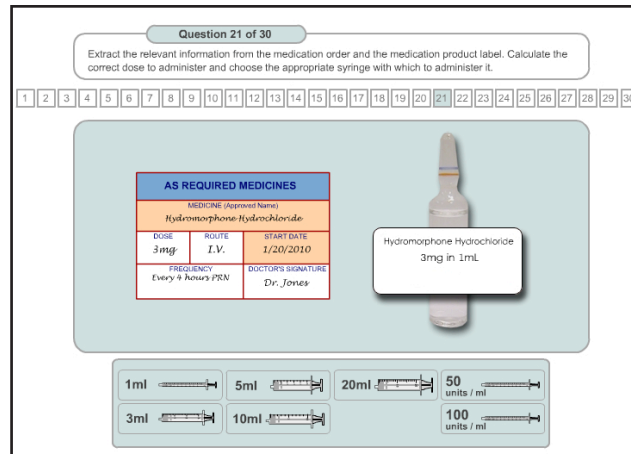


Figure 14: The First Step of a Typical Injection Question

In the first step, you are prompted to extract the relevant information from the medication order and medication product label and select an appropriately-sized syringe with which to administer the correct dose of medication. You have a choice of seven syringes.

Click on the syringe of choice to continue to the next step.

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

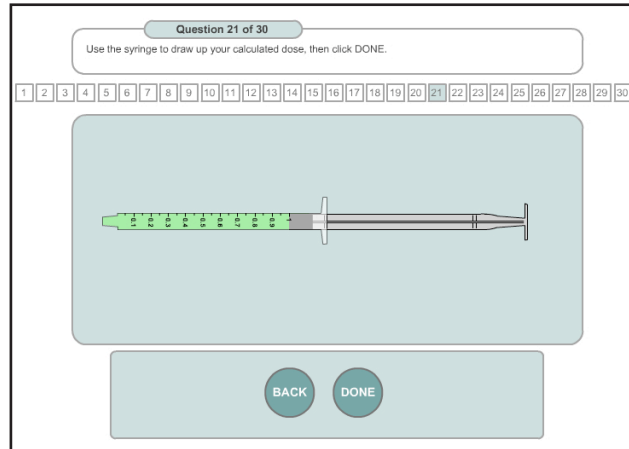


Figure 15: The Second Step of a Typical Injection Question

Click on and drag the syringe plunger to the right until the desired volume of liquid is drawn into the syringe. Release the mouse button.

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

Intravenous Infusion Questions

Intravenous Infusion (IV) assessment questions are presented in three steps.

Question 1 of 10 STAGE 1

Extract the relevant information from the medication order and the medication product label.

1 2 3 4 5 6 7 8 9 10

INFUSION FLUID		ROUTE	INFUSION DURATION	MEDICINE ADDED		DR'S SIGNATURE
TYPE/STRENGTH	VOLUME			APPROVED NAME	DOSE	
Glucose 5%	100 mL	I.V.	4 hours	-	-	Dr. Jones

100 mL
Glucose 5%

Authentic World
Solution Administration Set
60 drops per ml

NEXT

Click DONE when you are ready to continue

Figure 16: The First Step of a Typical Intravenous Infusion Question

In the first step, you are prompted to extract the relevant information from the medication order and medication product label.

When ready, click the **NEXT** button.

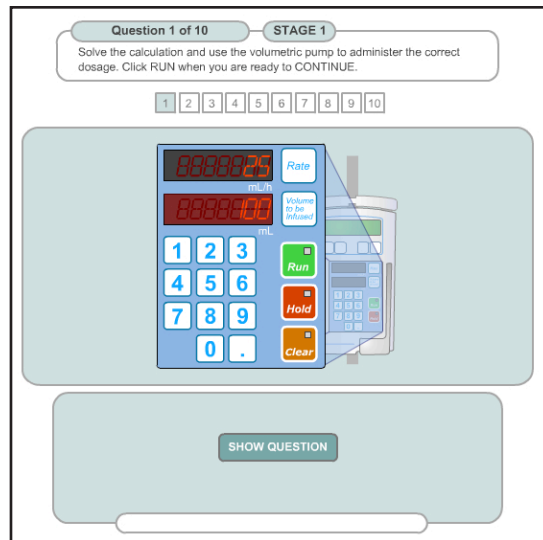


Figure 17: Entering the Rate and Volume to Be Infused on a Volumetric Infusion Pump

In the second step, the representation of a volumetric infusion pump appears. Enter the hourly rate value on the pump by clicking the **Rate** button and then clicking the appropriate number keys to represent the answer (25 in the above example).

After entering the rate, enter the total volume to be infused on the pump by clicking the **Volume to be infused** button, and then clicking the appropriate number keys to represent the answer (100 in the above example).

Click the **SHOW QUESTION** button as needed to refer back to the medication order and medication product label information. When you are finished reviewing the question, click **HIDE QUESTION** to return to the volumetric infusion pump screen.

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

In the third and final step, you are required to represent your answer as drops per minute by adjusting the administration set accordingly.

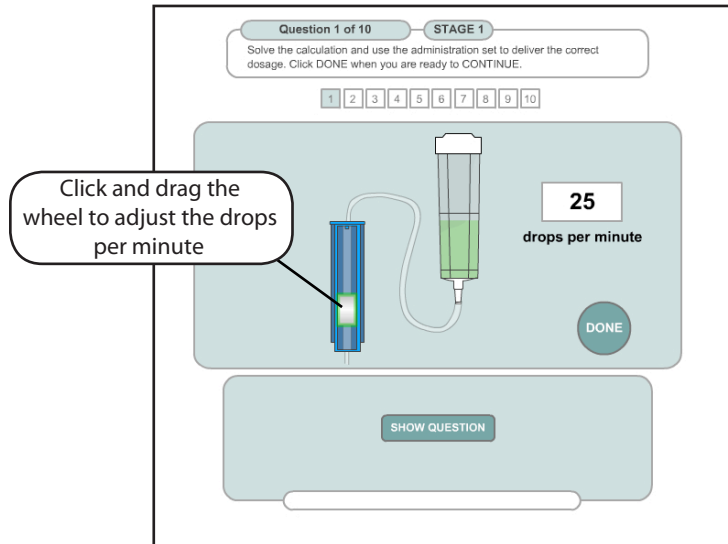


Figure 18: Representing the Answer with an Administration Set

Click the “wheel” of the fluid control mechanism on the left and drag the wheel up or down until the desired answer is represented in the **drops per minute** box.

Click the **SHOW QUESTION** button as needed to refer back to the medication order and medication product label information. When you are finished reviewing the question, click **HIDE QUESTION** to return to the administration set screen.

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

Completing the Assessment

When all questions have been answered, you will be told 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.

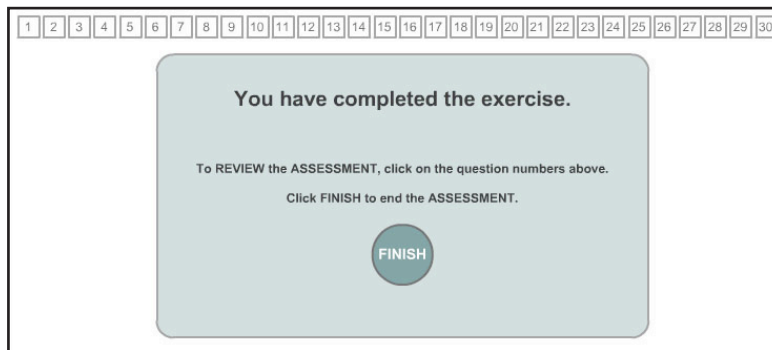


Figure 19: The Exercise Completion Screen

Click on the small box that represents the question number to enter review mode. The Question reappears in **REVIEW MODE**.

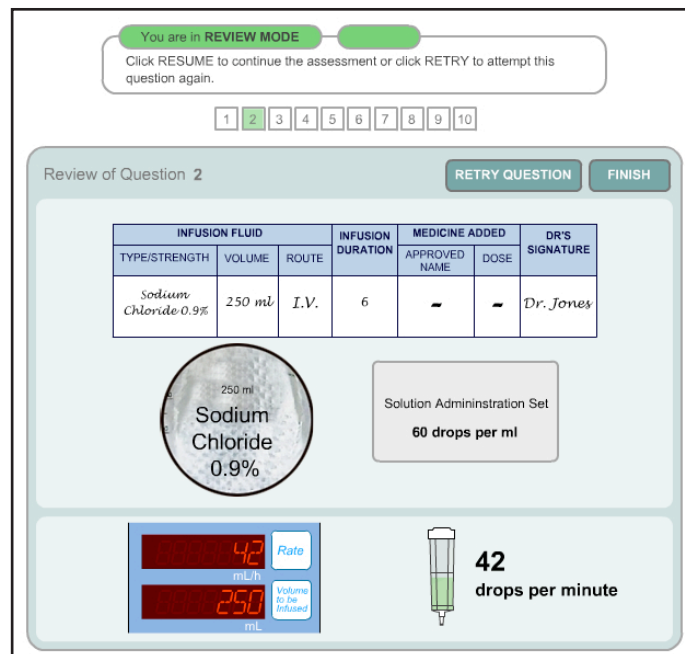


Figure 20: Reviewing an Assessment Question

Your answer reappears with the question.

If you wish to change your answer, click the **RETRY QUESTION** button to clear the existing answer and to start again.

If you are satisfied with the answer, click the **FINISH** button to return to the Exercise Completion screen.

User Records

Selecting the User Records option from the Main Menu opens a panel showing the Assessments you've taken.

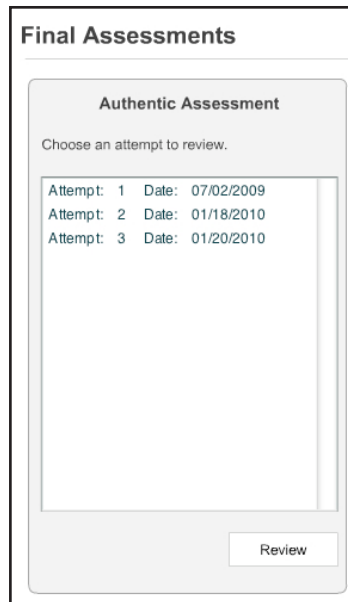


Figure 21: The Final Assessments Panel

You can review an assessment by selecting it in the list box and clicking on the **Review** button.

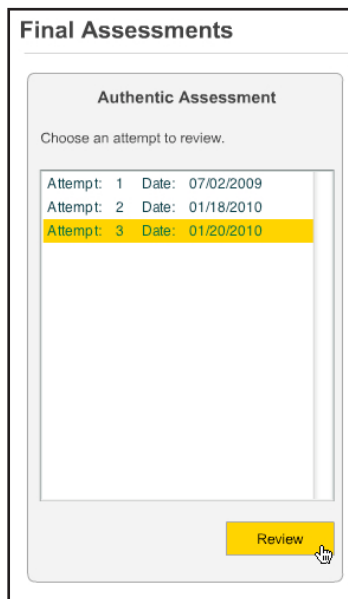


Figure 22: Selecting a Final Assessment to Review

A list of all the questions and scores of the selected assessment appears.

Final Assessments											
Click on a Question to review feedback.										Print	Back
Tablets & Capsules											
Question Number	1	2	3	4	5	6	7	8	9	10	
Answer	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	
Liquid Medicines											
Question Number	11	12	13	14	15	16	17	18	19	20	
Answer	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	
Injections											
Question Number	21	22	23	24	25	26	27	28	29	30	
Answer	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	
I.V. Infusions											
Question Number	31	32	33	34	35	36	37	38	39	40	
I.V. Pump	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	
Drop Rate	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	

Figure 23: Reviewing a Final Assessment

The questions are grouped according to medication type (i.e. **Tablets & Capsules**, **Liquid Medicines**, **Injections** and **IV Infusions**).


For more detailed feedback on any of the questions, click the appropriate checkmark or **X**. A summary of the selected exercise appears.

A screen providing details pertaining to the question and answer appears.

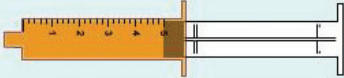
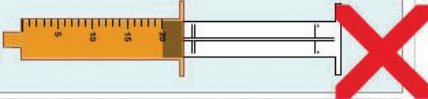
Final Assessments

You are reviewing Question 17 Print Back

AS REQUIRED MEDICINES		
MEDICINE (Approved Name)		START DATE
Oxycodone		3/2/2011
DOSE	ROUTE	FREQUENCY
1mg	ORAL	Every 6 hours PR
DOCTOR'S SIGNATURE		PHARMACY SUPPLY
Dr. Jones		A. Mann



User Answer

/ * =

Correct Answer




Figure 24: Reviewing a Question and Answer

There are three main components to question feedback.

- The topmost portion of the screen represents the key elements of the problem (the ordered dose and the medication label).
- The center portion of the screen shows **Your Answer** to the problem. Where a mistake has been made, a large **X** appears. If the on-screen calculator was used to compute the answer, the calculator keystrokes are also shown.
- The lower portion of the screen at the top shows the **Correct Answer** to the problem.

In the above example, the user made a calculation error. The calculator keystrokes indicate that the numeric values for ordered and dispensed dose were entered incorrectly and the user drew the incorrect amount of medication.

To obtain a printed summary of your performance for the assessment click on the **Print** button near the top of the page. A cover page summarizing the assessment prints.

METI		eDose					
USER [auth09a101] Matt Brown					DATE 01/20/10		
Foundation (Year 1)	Medication Domain			I.V. Infusions Domain			
	TC	LM	INJ				
Complexity							
Unit Dose	2	3	3	8	ml/hr	9	
Unit & Multiple Dose	6	7	6	19	drop/min	9	
	8	10	9	27		18	
Total Score						45	

Figure 25: The Print Cover

The cover page is followed by a summary of each of the assessment sections.

Username		METI eDose				
[auth09a101] Matt Brown						
Section	Date					
Tablets & Capsules	01/20/10					
Question			Answer	Your Answer		
1	Medication Name	Prescribed	Dispensed	Quantity		
	Fexofenadine	180	180mg	1 Tablet	1tab(s)	1tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
2	Verapamil Hydrochloride	240	240mg	1 Tablet	1tab(s)	1tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
3	Hydralazine	50	50mg	1 Tablet	1tab(s)	2tab(s) ✗
	Medication Name	Prescribed	Dispensed	Quantity		
4	Pravastatin	20	10mg	1 Tablet	2tab(s)	2tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
5	Quetiapine	400	100mg	1 Tablet	4tab(s)	4tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
6	Quetiapine	200	100mg	1 Tablet	2tab(s)	2tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
7	Quetiapine	50	25mg	1 Tablet	2tab(s)	2tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
8	Albuterol	25	50mg	1 Tablet	0.5tab(s)	2tab(s) ✗
	Medication Name	Prescribed	Dispensed	Quantity		
9	Verifaxine	150	50mg	1 Tablet	3tab(s)	3tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
10	Glimepiride	8	4mg	1 Tablet	2tab(s)	2tab(s) ✓
	Medication Name	Prescribed	Dispensed	Quantity		
Grand Total				8		

Figure 26: A Printed Summary of a Section of the Final Assessment

Help

Selecting the **Help** option from the Main Menu opens a screen with three options.

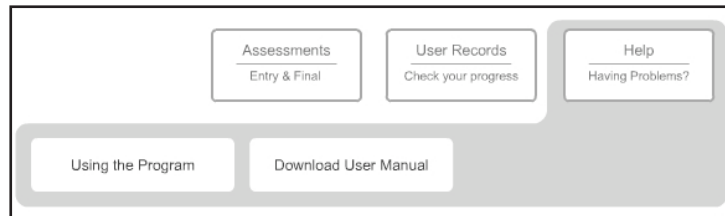


Figure 27: Options Available on the Help Page

Using the Program

Selecting the **Using the Program** option presents a list of topics. Clicking on a topic opens an animated help presentation on that topic.

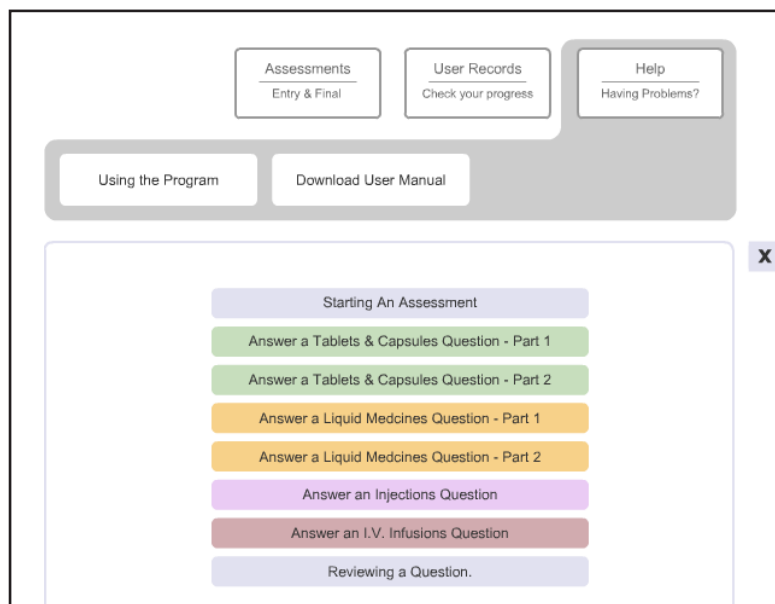


Figure 28: The Using the Program Screen

Downloading the User Manual

Selecting the **Download User Manual** option activates a copy of this User Guide in a new browser window.