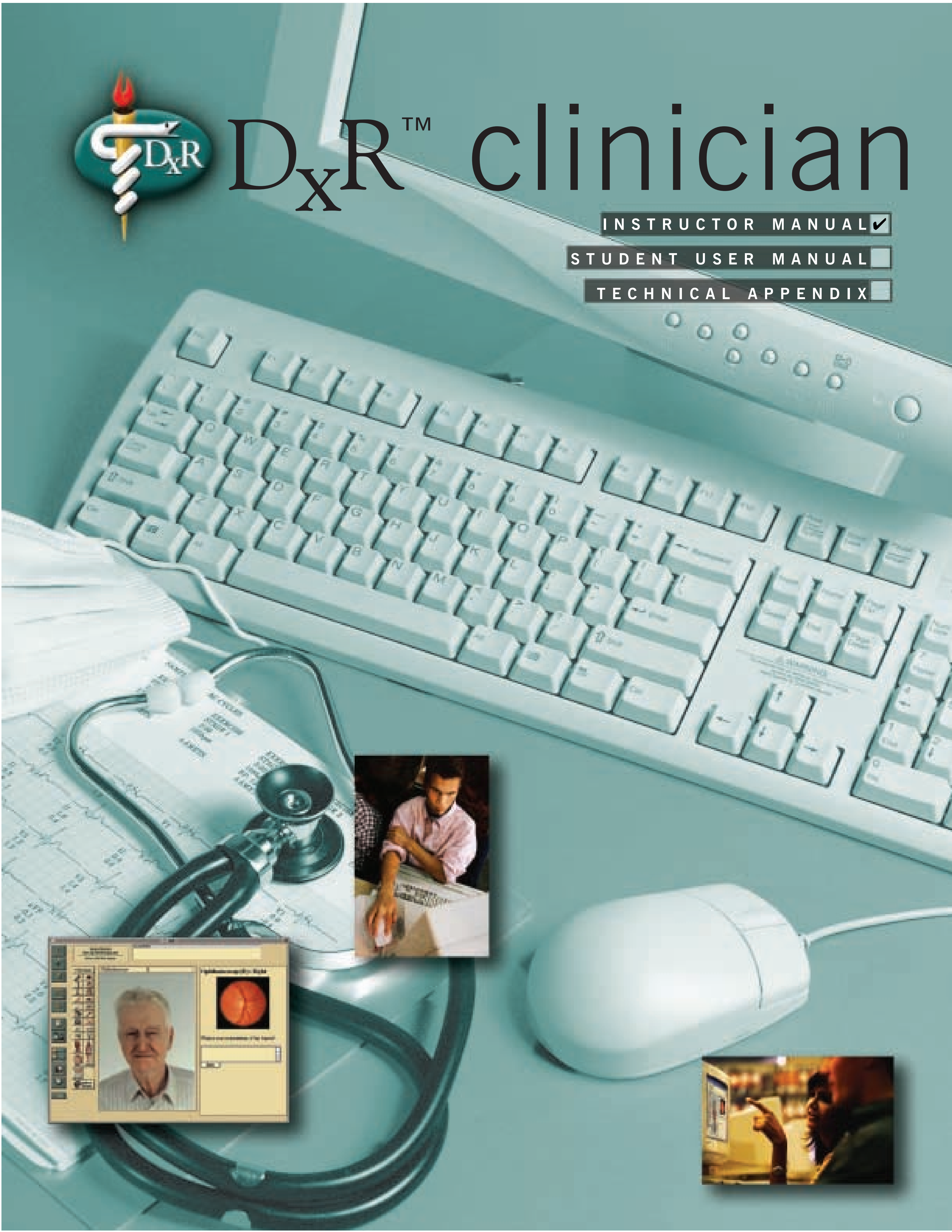
DxR™ clinician

INSTRUCTOR MANUAL ✔

STUDENT USER MANUAL

TECHNICAL APPENDIX



Introduction

D_XR Clinician is a complete computer patient simulation package consisting of prepared patient cases, management tools (for setting the evaluation criteria, analyzing student records, and enriching the program with learning resources and content questions), and authoring tools (for developing new cases of your own).

D_XR was developed because healthcare professionals face the difficult task of determining the clinical reasoning skills of individual students. The current procedure of observing and mentoring students during preclinical patient encounters and clinical clerkships provides considerable insights into the clinical reasoning process but does not provide any means of quantifying the specific skills.

D_XR Clinician software, on the other hand, does have the ability to monitor each action of the student during the "patient" encounter and to provide feedback about the level of clinical reasoning he or she has demonstrated.

This manual provides detailed instructions for how to use the management tools. The instructions explain how to set the evaluation criteria for any D_XR Clinician case. There are also instructions for how to collect individual student data into the Record Utility, which can not only analyze an individual student's record but can also provide summary performance data for a group of students who completed the same case.

Because each clinical problem brings with it a set of learning issues that may stimulate a student's need to know basic content, we have designed the software so that users can access Web sites containing learning resources, such as basic knowledge and clinically relevant content. This feature permits the student to access a learning resource from within the patient case and review the relevant learning issue in the context of the problem-solving task. And finally, another important feature of the D_XR software is the Query function, which allows you to attach content-related questions to a given case. This feature lets you test the student's content knowledge, again in the context of the problem-solving task.

The intent of the software is to give you, the instructor, control over the contents of the case and the way in which the evaluation criteria are set so that you can provide the best educational experience for your students.

J. Hurley Myers

J. Hurley Myers, Ph. D.
Professor Emeritus of Physiology and Internal Medicine
Southern Illinois University School of Medicine
President, D_XR Development Group, Inc.

Contents

Getting Started

D_XR Clinician consists of a powerful set of tools designed to make the classroom experience a valuable and pleasant one for both faculty and students.

The D_XR Clinician package includes three basic components.

- The D_XR Management tools enable you to control who gains access to a D_XR case or cases and what the users see when they enter a D_XR case. You can edit patient data, edit evaluation criteria, or decide to proceed without changing the data and/or evaluation criteria that the case author created. The criteria set by the instructor and/or case author form the basis for evaluating student performance in investigating the case and reaching a diagnosis. D_XR Management also includes tools for maintaining files for students who are assigned to work through a D_XR case.
- The D_XR cases consist of data collected by our case authors based on real patient encounters. Rather than conducting an in-person investigation, students will open a D_XR case and will begin a simulated clinical investigation using the tools available in the D_XR case. Students will have access to the same basic clinical investigative techniques that are available to a healthcare professional dealing with an actual patient. Using the D_XR case information, students will be able to question the patient, conduct a simulated physical exam, and order lab tests. The student will also be able to see and review the results or responses before making a diagnosis and management choices. At the end of the case, the student will be able to access an initial assessment of his or her performance compared to the instructor's expected responses.
- The D_XR Record Utility — the only component of the D_XR package which isn't Web-based— is where the instructor can review and evaluate student and group performance on a D_XR case. The Record Utility also allows instructors to change the evaluation criteria set earlier in D_XR Management or override the computer's evaluation. The Record Utility is also the only place that instructors can evaluate the student's management plan. Data from the Record Utility can be printed for student or faculty use.

D_XR Clinician is a Web-based application that can be hosted either on a Web site at your institution or by D_XR Development Group. If your institution is hosting the Web site, the first step in using the D_XR Clinician tool is to make sure your Webmaster and/or technical support personnel know how you intend to use the program (i.e. coursework, exams) and are aware of any special technical needs you may have. For those hosting DxR Clinician on a Web site at their institutions, technical requirements are listed in the Technical Appendix manual.

We recommend that you start using D_XR Clinician (D_XR) by working through a patient case just as you would ask students to do. This will help you become familiar with the structure and presentation of D_XR cases.

Preparing to Work Through a D_XR Case Yourself

Before you assign a case for your students to complete, it's important that you work through the case just as students would. This process will allow you insight into the difficulty of the case, the key findings in the case, and the criteria that you might want to change or add.

Before you can start working through a case, you must select a case or cases from the catalog and install the case(s) into a directory that's specific to you. This is accomplished through using the DxR Clinician Management Utility. You should be provided a user ID and password to access the D_XR Management Utility by either your Webmaster or by D_XR Technical Support, depending on where your site is hosted. Once the case is installed, you may use the Management Utility to make a "student" login for yourself in one of the cases. After you have allowed yourself access to a D_XR Clinician case you will be ready to work through the case just as a student would. Follow the steps in the Quick Help on pages 12 and 13 of this manual.

As you move through a selected case, be careful to note case data that you want to change. Most text data can be edited. You should also take careful note of the Initial Assessment that appears at the end of the D_XR Clinician case (when you click the Evaluate button). The Initial Assessment provides a first look at how student performance is assessed. It may provide you with the first indications of how you would like to change evaluation criteria before administering a D_XR Clinician case to your students. Keep in mind the educational level of your students and any specific teaching objectives as you complete the D_XR case. After your case review, you will know whether or not you would like to edit patient data and/or evaluation criteria.

Accessing the D_XR Management Utility

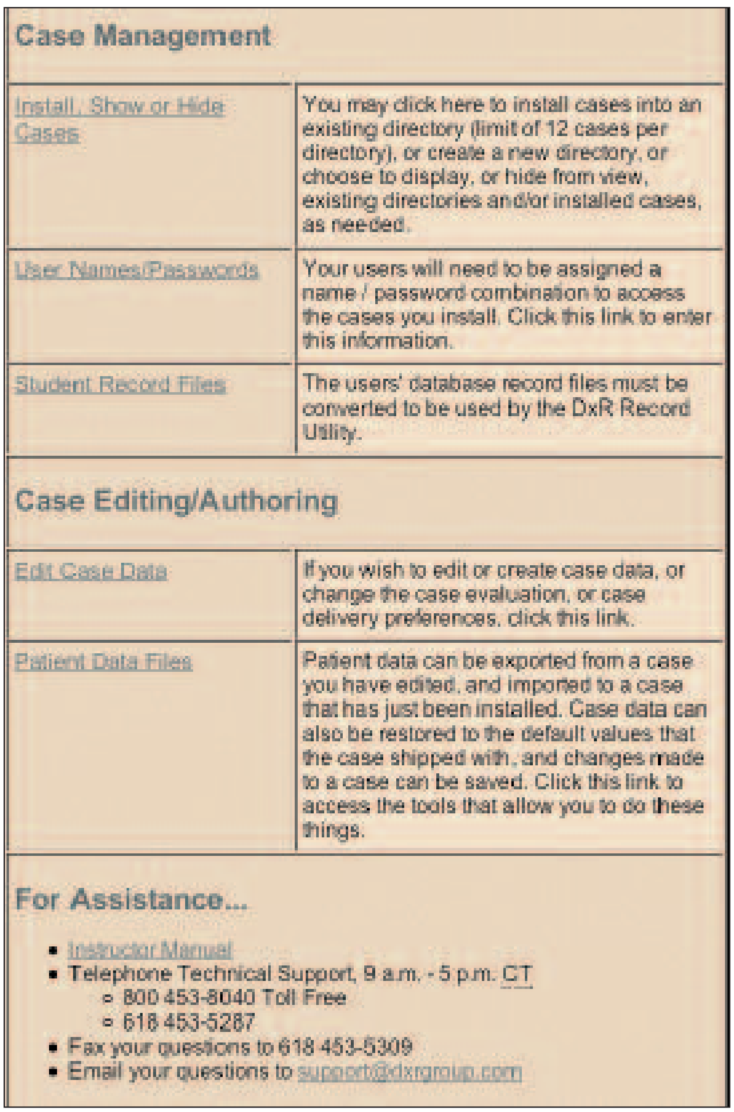
If your school is hosting your site, your Webmaster or system administrator will provide a user ID and password, as well as the address of the site. The D_XR Management Utility is installed at a location that will look like the example below. Please note that this address is case sensitive.

http://your_site/DxR/DxRManag

If your site is hosted by the D_XR Development Group, we will have given you a user name and password to allow you to access the D_XR Management Utility at the address listed below. Please note that this address is case sensitive.

http://yourschool.dxronline.com/DxR/DxRManag

The log-in window for the D_XR Management Utility will ask for your user ID or user name and password. When you are successfully logged in, you will see the D_XR Management Index screen.



Case Management	
Install, Show or Hide Cases	You may click here to install cases into an existing directory (limit of 12 cases per directory), or create a new directory, or choose to display, or hide from view, existing directories and/or installed cases, as needed.
User Names/Passwords	Your users will need to be assigned a name / password combination to access the cases you install. Click this link to enter this information.
Student Record Files	The users' database record files must be converted to be used by the DxR Record Utility.
Case Editing/Authoring	
Edit Case Data	If you wish to edit or create case data, or change the case evaluation, or case delivery preferences, click this link.
Patient Data Files	Patient data can be exported from a case you have edited, and imported to a case that has just been installed. Case data can also be restored to the default values that the case shipped with, and changes made to a case can be saved. Click this link to access the tools that allow you to do these things.

For Assistance...

- Instructor Manual
- Telephone Technical Support, 9 a.m. - 5 p.m. CT
  - 800 453-8040 Toll Free
  - 618 453-5287
- Fax your questions to 618 453-5309
- Email your questions to support@dxrgroup.com

Fig. 1: The D_XR Management Utility Index screen.

Creating Directories and Installing Cases

D$_X$R cases are installed into directories. If you are teaching a particular set of diagnostic skills or are covering specific subject matter you may choose to name your directories after the skill or subject matter. If you teach more than one class or students at varying levels of education, you may choose to name your directories after the classes. You can install the same case in multiple directories and set different grading criteria for each instance.

Fig. 2: Cases displayed in DxR's Waiting Room.

You can provide students with access to the entire set of cases, or you can provide HTML links from your own Web pages directly to specific cases.

You may begin creating directories and installing cases within them any time after your site is placed on the server and the server is properly configured.

1. Open the D$_X$R Management Utility and click Install, Show, or Hide Cases. A screen will appear, displaying any directories that have already been created on your site.
2. Type the name of the directory you would like to create into the space labeled "Directory." Click Create when you are done. A screen will appear, displaying the list of cases that are available for installation.
3. If you want to install only some of the cases in the list, click inside the box preceding the names of all cases you would like to install into this directory, and then click Install Selected Cases. Click Continue to verify your choices.
4. If you want to install all the cases in the list, click Install All Cases. All the cases in the list will be installed into your directory.

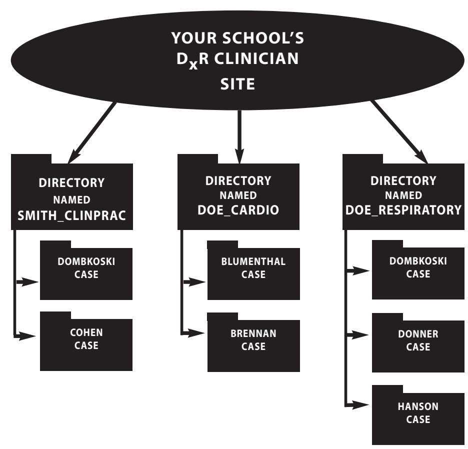


Fig. 3: DxR Patient cases installed in directories.

Note: Each D$_X$R directory can contain only 12 cases. If you install more than 12 cases into a single directory, the program will divide the cases into groups of 12 for display.

- If you choose to have a technical support person install your cases into directories, you will need to provide that person with the names of the directories you would like to create and the cases that should be contained in each directory.

Directory names may be chosen by case subject, course number, or almost any other cue that will help you remember the directory and its contents.

ALERT

You should not use "DxR" as the complete name of any of the directories, although you can include "DxR" as part of the directory name.

Adding Cases to an Existing Directory

After you've installed your initial cases into a directory, you may decide later that you would like to add another case to the same directory. To do this, follow these steps.

1. Click the Install, Show, or Hide Cases link on the Management Utility Index screen. On the Directories screen, scroll down to see the list of directories and cases installed on your site. Find the directory to which you want to add cases.
2. Click the Add Cases button at the bottom of the case list.
3. Select the cases you'd like to add and then click Install Selected Cases.

Hiding/Showing directories and cases

After you create a directory or directories on your D_XR Clinician site, you can also determine whether the directories or the cases within them are visible to those who gain access to the site. For example, using the Hide/Show features, you can install all the cases you plan to use during a semester with your class and then make those cases visible only when you are ready for students to enter and access them. To hide or show a directory on your D_XR Clinician site, follow the steps listed below.

1. From the D_XR Management Utility Index screen, click the Install, Show, or Hide Cases link. When the directories screen appears, you will see a list of all the directories that exist on your site and a list of the cases installed within them. A checkmark in the box preceding the directory or case name means that directory or case is visible to students on your D_XR Clinician site.
2. To change whether a directory or a case is visible on your site, click inside the box. Next, click Save Changes. If your directory or case was previously visible, it will now be invisible to those who access your D_XR Clinician site. If the case or directory was previously invisible, it will now be visible.

User Names and Passwords

To allow yourself and/or your students access to a D_XR case, you should first click the User Names/Passwords link to enter approved user names and, optionally, passwords.

Using care in how you enter the names and passwords will ease the process of logging on to a case. **User names are NOT case sensitive, but passwords ARE case sensitive.** Each time a user (either you or a student) accesses a case, he/she must type in a user name/password that is among those entered for that case. Users who deviate by including extra spaces or by changing letter in the password case won't be able to access the patient case, so it's important that you make students aware of the format for their user names and passwords.

Step 1. Creating an access list for users

When giving a group of students access to a case or group of cases, we recommend that you create your lists of user names and passwords using a plain text editor such as Word Pad® or SimpleText® following the format specified below. Save the file as plain text. If you use a word processor such as Microsoft® Word® or AppleWorks®, enable the feature that allows you to see spacing and other formatting marks that would otherwise be invisible. (See Helpful Hint) You can then simply copy and paste your list into the Add Users to Case field.

Step 2. Formatting User Names & Passwords

The format for entering user names and passwords is as follows:

Jennifer Johnson/456-abc

- Any letter, uppercase or lowercase, or any number may be used. Hyphens such as in an ID number are permitted, but slashes may only be used to separate the user's name from his/her password. A forward slash (/) must separate the user name from the password in your list.
- Press Enter (Return) after each user name/password combination since each combination must be on its own line.
- Names should use only regular letters and/or numbers. A space between the first and last name is OK.
- Names must be unique.
- Passwords can contain letters, numbers and hyphens but no other non-alphanumeric character.
- Passwords do not need to be unique, though this is preferable.
- A password can be the student's ID number, complete with dashes. Out of concern for the user's privacy, however, some instructors may choose to use only the last four digits of the student's ID number.

HELPFUL HINT

Most word processing applications include a function that allows you to see markings, such as spaces, that are not otherwise visible. (This function may be accessed under the preferences settings for the word processing application.) Choose this option to help determine if you've included extra spaces in your User names and Passwords format. We also recommend that you keep your formatting as simple as possible. Avoid any tabs or extra spaces within the password.

NOTE

D_XR Clinician cases are shipped with the Require Passwords preference in the Case Delivery Options section turned ON. If you don't want to force students to enter a password in order to enter the case, you can turn this preference OFF in setting Case Delivery Options.

Step 3. Entering your user names/passwords

Navigate to the Index screen of the DXR Management Utility and click User Names/Passwords to go to that screen.

A. **To enter new user names for either a single case or for all cases in a particular directory, follow these steps:**

- Select the directory containing that case(s) for which you want to add users.
- Select the individual case or click ALL CASES (to add your user list to all cases in that directory) . A list of existing users will appear in the field labeled Current Users In Case.
- If you are adding a list of user names, go to your text editor, copy the list you've created, and paste it into the field labeled Add Users to Case (shown in Figure 5). If you are adding a single user, type the user name and password into the field labeled Add Users to Case.
- Click Create Users to create the user name(s) and password(s) you just entered.

B. **To change an individual user name/password** that is already entered for a case, select the directory name and then select the case name. Select the name you want to edit from the Current Users field and then click Edit User. Type in your changes and click OK.

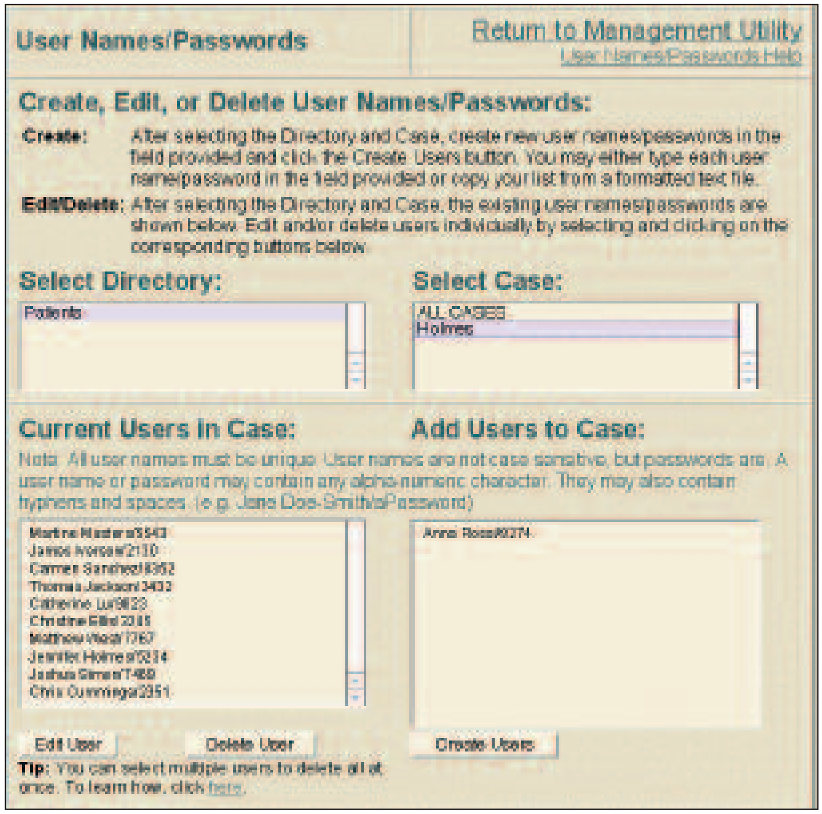


Fig. 4: The DxR Management Utility's User Names and Passwords screen.

C. **To permanently delete a user name/password,** select the directory and then the case. In the Current Users field, select the user name you want to delete and click Delete User. Caution: Deleting a user name/password is a permanent action that discards both the user name/password and the student record associated with it.

Note: You can select multiple user names/passwords for deletion.

PC users: Hold down the control key while clicking on the names you want to select and then delete, or press the shift key to select a string user names.

Mac users: Hold down the Command key while clicking on the names you want to select and then delete, or press the shift key to select a string user names.

Working Through a Case: Quick Reference

1. STARTING
   a. Follow the URL or Link provided by your instructor to the desired case. You will access the patient case either directly by clicking the D_XR Clinician opening screen, or through a waiting room.
   b. Enter your assigned name and password. After name/password are verified, click Start.
   c. Review the information on the patient's Presenting Situation. Answer the question "What would you like to do next?" Click Interview, Physical Exam or Lab to begin your investigation.
2. INTERVIEW PATIENT
   a. Click Interview . Initially you may be able to see only the Present Illness category or to review a summary of the History of the Present Illness (HPI). Select any questions appropriate for that category as directed below (2c).
   b. Follow the on-screen instructions to enter a Diagnostic Hypothesis and access other categories.
      1. After you enter your Diagnostic Hypothesis, you will need to select the hypothesis you are investigating from your list at the top of the screen before you can ask a question. If you aren't investigating a particular hypothesis, select Scanning.
      2. To associate a question with more than one Hypothesis, hold down the CTRL (Command) key while clicking the appropriate hypotheses.
      3. To associate multiple questions with the same hypothesis, hold down ALT (Option) while highlighting the questions.
   c. Click the category for the question you want to ask. Questions are listed in the box in the upper half of your screen. Highlight the question and click Ask. The response appears in the box below.
   d. To find a question among the various categories, click Search at the end of the category list and enter a keyword or phrase in the box that appears.
3. STATEMENT OF PROBLEM AND DIFFERENTIAL DIAGNOSIS
   a. At some point in your investigation of the patient case, you will be asked to frame the patient's problem and form a list of diagnostic hypotheses in order of importance. When you have completed your initial list, click DONE to return to the patient. If you would like to gather more data from the patient before entering this information, close the DD_X window. Depending on your instructor's preferences, you may not be able to investigate areas other than the Present Illness without entering your hypotheses.
   b. If you would like to change or rearrange your list of diagnostic hypotheses, click the DIFFERENTIAL DIAGNOSIS (DDx) button.
      1. To edit your statement of the patient's main problem, type changes in the text field at the top of the message box.
      2. To add a diagnostic hypothesis, type it in the middle text box, then click ADD.
      3. To delete a diagnostic hypothesis, select it and click DELETE.
      4. To change the order of the diagnostic hypotheses, select the one you want to move and click UP or DOWN. It will move one position in the list.
      5. When finished, click DONE.
4. Perform A Physical Exam (When you first enter the Exam screen, you will see a description of the patient's appearance.)
   a. Click EXAM button. If you are prompted with the Hypothesis Screen, make any changes you wish and click Done when you are satisfied with your entries.
   b. Specify the diagnostic hypothesis you are investigating.
   c. Select the appropriate tool, then click the body part you want to examine.
   d. Click the button for the Body View you wish to examine (i.e., head, chest, abdomen). The name of the tool and the body part that your cursor is positioned to select will be displayed above the patient picture. Click Other Exams to access Observations, Maneuvers, or Mental Status exams. Click Vital Signs to see a list of the patient's vital signs.
   e. Some exams will yield audio, graphic, or text data that you must interpret before you can enter a diagnosis. (Heart sounds are soft, you may need to use headphones to hear the clearly. QuickTime is required to play sounds.) Enter your interpretation in the text field provided, then click Enter. Click the CONSULTANT button to view any available information from a professional consultant.
5. Order Laboratory Tests Depending on your instructor's choices, you will be able to order labs either individually or as a group.
   a. Click the LAB button. If you are prompted with the Hypothesis screen, edit as you wish and click Done.
   b. Each time before selecting a lab test, specify the diagnostic hypothesis you are investigating.
   NOTE: Some lab tests results are delayed. If you select a lab test with delayed lab results, your order can be submitted with a group of lab tests, but you won't be able to see its results until after you submit your final management plan and click the Continue arrow. If you need to change your diagnosis and treatment after viewing delayed lab results, you will have that opportunity.
   c. To get additional information about a lab test before ordering, click the TEST INFO button, then select the test. To search the database for a specific test, enter the test name or related keyword, and click the SEARCH button. Search results appear in list form. Select a lab from the search results to order it immediately or to place it in your Proposed Lab Orders list.
   d. To order a test from the group of 32 common tests click the name of the desired test.
   e. To order tests not listed in the common group, select a category of tests, then select the test from the list of available tests for that category.
   f. When ordering lab tests as a group, make sure you are satisfied with the selections in your Proposed Lab Orders list, then click Submit to order those lab tests. Once your orders have been submitted, click a specific lab test and click View Results.
   g. View and interpret all available consultant information as described above (4e).

6. Enter DIAGNOSIS

Click DIAGNOSIS button to enter your final diagnosis. Click the diagnostic hypothesis that most closely matches your final diagnosis and click SELECT. In the next text field, edit this hypothesis to express your final diagnosis in pathophysiologic terms. Justify your diagnosis and select your confidence level. When you are satisfied, click ENTER FINAL DIAGNOSIS. (Click CONTINUE.) After you commit to a final diagnosis, you will not be able to return to the case.

7. MANAGEMENT AND PROBLEM LIST

You may be prompted to type in, prioritize, and save a patient problem list. Select where treatment should take place (in hospital or outpatient). Select the aspects of management you wish to prescribe by clicking the specific buttons and detailing the treatment you desire. After you have entered your final management plan, results for delayed labs will be available for review. When finished, click EVALUATE to have your performance evaluated. Answer the Management Confidence questions and click Done.

8. INITIAL SELF-ASSESSMENT

The initial self-assessment provides information about your investigation of the case. Click one of the categories at the top. A star next to the category indicates you completed the task successfully. On each screen, items you requested during your workup of the patient are marked with a star. Click an item to review the patient results.

Other Tips

NOTES You may use two methods to record text to your personal NOTES.

a. To record data while interviewing a patient, conducting a physical exam or ordering lab tests, highlight the text to be saved, then click the ADD portion of the NOTES button. (Some browsers do not support this feature. In this case you will need to select the text you want, copy it to the computer's clipboard, open the Notes window, and paste in the text.)

b. To review, edit or delete existing notes, and/or add new information to your notes manually, click the VIEW portion of the NOTES button.

c. You must click the Save button in the Notes screen to preserve your changes.

d. To print your notes, click the PRINT button on your Notes window. When the new browser window appears, click Print on the browser's button bar.

LEARNING ISSUES SOAP NOTES and Learning Resources If you wish to make note of learning issues encountered within the program or make SOAP notes, click the appropriate button. You must click the Save button to preserve your changes. Learning Resources accesses a list of Web links.

EFFICIENCY WARNING: You will see a warning when you are within 3 of the total number of questions, exams or lab tests deemed necessary to complete this case efficiently. You will be warned again when you are within 1 of that number. You may continue collecting patient data after the warning, but if you do, you will not be able to reach the highest level of performance.

Case Investigation

Interview

Physical Exam

Laboratory

Differential Diagnosis

Diagnosis

Patient Management

Interpretation

Consultant

Notes

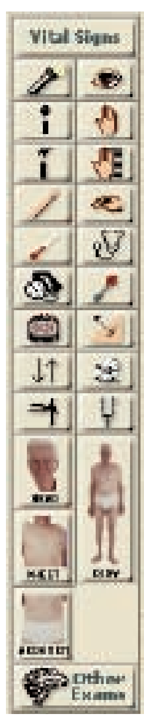
Learning Issues

SOAP Notes

Online Help

Learning Resources

Examination Tools



Vital Signs

Flashlight, view

Ophthalmoscope, Feel

Otoscope, Motion/Strength

Tongue Blade, Percussion

Thermometer, Stethoscope

Sphygmomanometer, Hammer

Stopwatch, pin

Position Sense, Cotton

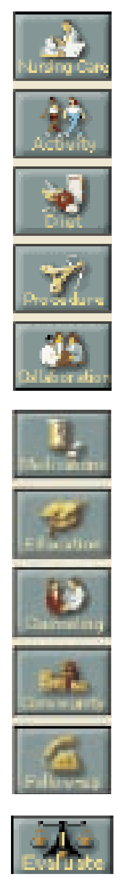
Speculum, Tuning Fork

SELECT BODY VIEW:
Head
Chest
Abdomen
Body

Observations, Maneuvers, Mental Status

HINT:
To measure temperature sensation on various parts of the body, such as the foot, ankle, hand, etc., use the tuning fork. This measures response to a cold tuning fork.

Patient Management



Nursing Care

Activity

Diet

Procedure

Collaboration

Medications

Education

Counseling

Community Resources

Follow-up

Evaluate Performance

Editing Case Data – Changing Evaluation Criteria

After going through a case, you may decide to change the evaluation criteria or perhaps replace patient responses within the case. D_XR Clinician cases allow you, the instructor, to modify the cases to better fit your teaching needs. The Edit Case Data link on the D_XR Management Utility Index screen allows you to customize D_XR patient cases by editing patient data, altering student evaluation criteria, selecting case delivery options, and questioning students on-line as they complete the D_XR case.

To begin editing case data:

1. Click Edit Case Data on the D_XR Management Utility Index screen.
2. Select the directory containing the case you want to edit, and then select the name of a case from those listed. Click Edit Case.
3. Choose the type of information you would like to edit. The Patient Intro, Patient Appearance, HPI, Interview, Exam, Lab, and Management buttons allow you to edit patient information within the case. The Case Editors allows you to type in information about yourself or others who collaborated on editing the case information. The Evaluate button allows you to edit the criteria used to evaluate student performance. The Case Delivery Options, Query, and Management Query buttons allow you to manipulate how the case content is delivered to the student. The Web Links button allows you to make Web-based learning resources available to students as they work through a case.

NOTE

Case data exists on the Web server. Changes you make to case data will overwrite existing data on the Web server, so it may be helpful to maintain a record of your changes in a separate text file.

Some results may contain formatting for tables. It's important that you do not remove formatting or markers, since they are required to access graphics, links, and tables associated with a response or result.

Editing Patient Data

Almost all text data within the cases can be edited. Each time you select a question, lab, or exam, you will have the opportunity to change the text response or result.

Web Links (Learning Resources)

You can add links to Web-based learning resources to provide your students with more information while they work through a D_XR Clinician case. These electronic learning resources (such as Web sites, etc.) can be made available in the Interview, Exam, Lab, and Management sections of the case. Students will be able to click the link to access these resources directly from within the program. You can choose to link a resource to a particular item within the case, or you can make the electronic learning resource available from anywhere within the case.

For example, if the patient is experiencing shortness of breath, you could type in the Web address link for a Web site that provides the student more information on that problem.

To link a Learning Resource to a particular item in a D_XR Clinician case, follow these steps:

1. Choose the item from the Interview, Exam, or Lab categories to which you would like to link a resource. Scroll down to the Learning Resources fields.
2. In the first field , type a word or a phrase that will appear to the students after the patient results/response which can be clicked to directly access the learning resource. In the second field, type in the URL (this is the Internet address) of the learning resource you want to make available. Click Save Changes in the window.

To link a learning resource that students will be able to access from anywhere within a D$_X$R Clinician case:

1. Click Web Links. In the space provided, type in the URL (this is the Internet address) of the learning resource you want to make available.
2. Also type in a word or phrase that will appear to the students which can be clicked to directly access the learning resource and click Add. You can add multiple links using this same method. Each link will be listed on a separate line.
3. When you are finished adding Learning Resources, the link(s) will be created. Click the link to open the new location(s) in a new window.

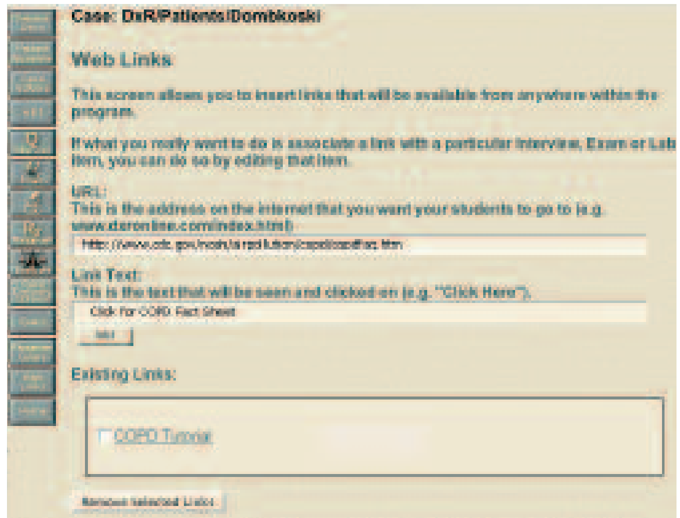


Fig. 5: Adding Web Links.

To remove a Learning Resource shown in the Existing Links field, select the link(s) to be removed by clicking inside the check-box and then click Remove Selected Links.

Adding Media

You can add your own properly-formatted graphics, sounds, or movies to a D$_X$R Clinician case. These would include such things as X-rays, CT scans, and photographs. Audio files can be used to allow a student to hear a patient's heart and breath sounds. In some cases, there might also be value in using audio files to present some portion of the Interview (such as to demonstrate slurred speech) that supports a certain diagnosis. Navigate to the client data item to which you want to add media and click the Add New Media button. A dialog box will appear.

1. Make certain that any file you wish to upload conforms to the specifications listed in the back of this manual.
2. Click the "Browse..." button below and navigate to the media file on your computer you wish to upload.
3. Click the "Upload File" button.

Once the file is successfully uploaded it will appear in your "Available Media List".

Note: Once a file has been successfully uploaded it cannot be removed by anyone but your system administrator, and even then it is not recommended.

Note: See the back section of this manual to access guidelines for media.

To add a graphic, a movie, or a sound:

1. Order the question, exam, or lab to which you would like to add media.
2. Scroll down to the Insert/Change Media items, then select the graphic, movie, or sound file from the Available Media list that appears (see Media Files Note). Click Preview Media if you want to see/hear the media as students who select this item will. Click Add to attach the media file to the interview question, exam, or lab test that you're editing. The name of your graphic, movie, or sound will automatically appear in the Media field.
3. Click Save Changes to preserve this link.

To remove the link to a graphic, simply highlight the media file name from the Media field and delete it. Click Save Changes.

MEDIA FILES NOTE

- If you are looking for a movie, the file name will end with

  .mov

- If you are looking for a graphic, the file name will end with

  .jpg .png or .gif

- If you are looking for a sound, the file name will end with

  .mp3

Helpful Hint

If you give students access to the Consultant text by activating this function in the Case Delivery Options, any media accompanying the item result will also accompany the Consultant Text.

Patient Intro Button

This function allows you to change the text of the Presenting Data displayed when the students first enter the case. We recommend you do not change the patient name since any changes wouldn't be reflected on graphics of the patient. Click Save Changes when you are done editing this information.

Patient Appearance Button

This feature allows you to type in and save a text description of the patient. The information would appear to the student as he/she enters the exam portion of the case.

Case Editors Button

This feature allows you to type in and save the name, title, and affiliation of yourself and the collaborators who helped to edit the patient case data.

HPI Button

This button displays a field where you can edit the text that describes the history of the present illness. This information will appear to students only if you've marked History of Present Illness in the case delivery options.

Interview Button

In this section, you may change the patient's responses to questions. You may also require students to justify certain requests for information or to interpret the patient's response. You may provide students with an expert opinion in the form of Consult Text after they make the interpretation or attach a learning resource to an item.

1. Select a category, and when the list of questions appears, select a question.
2. Click Ask to see the existing response.
3. Change the patient response in the Result Text field as desired.
   - Determine whether this question should be one of the criteria items to evaluate student performance in either the Diagnostic Process evaluation or the Management Plan.
   - Check the box marked Ask User to Justify Request to explain why they requested this information. If the "justify request" box is already marked, click inside the box if you want to remove the prompt to justify the selected item.
   - Add Media as the patient result and add Learning Resources to supplement the student's learning as desired. (See pp. 14-15.)
   - Click inside the Interpret box to require the student to type in an interpretation for the patient's response.
   - Optional: Type the text of an expert opinion in the field marked Consultant Text. Students will be allowed to access the information from this text field only after they enter an interpretation of the interview response associated with the text.
4. Click Save Changes to write your modifications into the patient database.

HELPFUL HINT

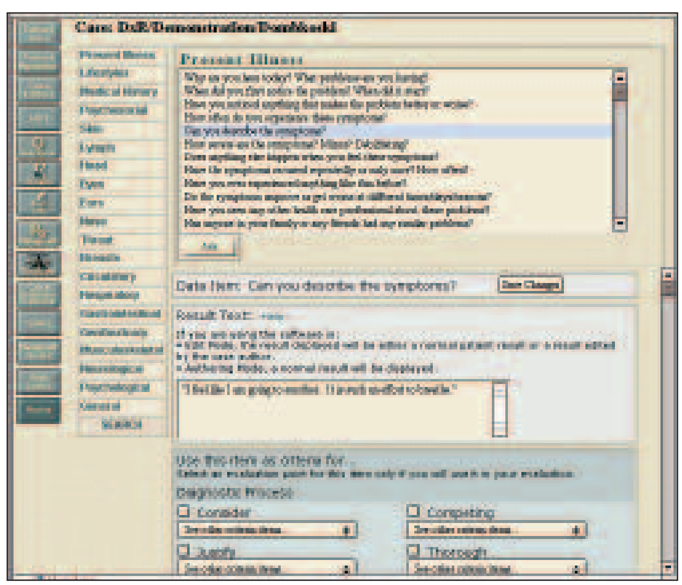
You may ask students to justify interview, exam or lab items, or you may remove a request to justify that is already included for those items. You may check the Justify box to gain insight into a student's clinical reasoning. The case author may have included a request to justify certain items.

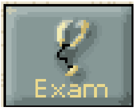
If you disagree with this request, click the checkmark in the Justify box to remove the request.

Criteria Note

Click the See Other Criteria Items button below each of the evaluation points to see a list of the items already selected as criteria for that node. You can also use this button to make the item you are editing equivalent with a criteria item already in the list.

Fig. 6: Editing data for the interview section.





Exam Button

In the exam section, you may change the patient's physical exam results as well as ask the students to justify their exam choices. You may also require the students to interpret the patient's exam results and provide them with an expert opinion in the form of Consult Text.

To edit exams, follow these steps.

1. Click the body view (using the small patient icons) that includes the body part you want to examine.
2. Click the exam tool you want to use.
3. Select the body part from the list that appears.
4. When the exam results appear, make changes in the field labeled Result Text.
5. Click Other Exams, select an item from the three lists (Observations, Maneuvers, and Mental Status) then change the results as desired for the chosen exam in the field labeled "Result Text". Also under Other Exams, select Vital Signs from the list to edit the patient's vital signs. Change the results for these values in the Result Text field as desired and click Save Changes. Please note that making changes under Vital Signs will not change patient data for other exams displaying the same information. Edit them separately.

- Determine whether this exam should be one of the criteria items to evaluate student performance in either the Diagnostic Process evaluation or the Management Plan.
- Check the box marked Ask User to Justify Request to explain why they requested this information. If the "justify request" box is already marked, click inside the box if you want to remove the prompt to justify the selected item.
- Add Media as the patient result and add Learning Resources to supplement the student's learning as desired. (See pp. 14-15.)
- Click inside the Interpret box to require the student to type in an interpretation for the patient's response.
- Optional: Type the text of an expert opinion in the field marked Consultant Text. Students will be allowed to access the information from this text field only after they enter an interpretation of the exam result associated with the text.

6. Click Save Changes when you are done making changes to this exam.

NOTE

If you edit results that would show up in more than one exam, (i.e. vital signs), you must edit the same values in all applicable exams. Example: Heart rate would show up under vital signs and in several individual exams. Such results should be edited in all exams where they would appear.

Criteria Note

Click the See Other Criteria Items button below each of the evaluation points to see a list of the items already selected as criteria for that node. You can also use this button to make the item you are editing equivalent with a criteria item already in the list.

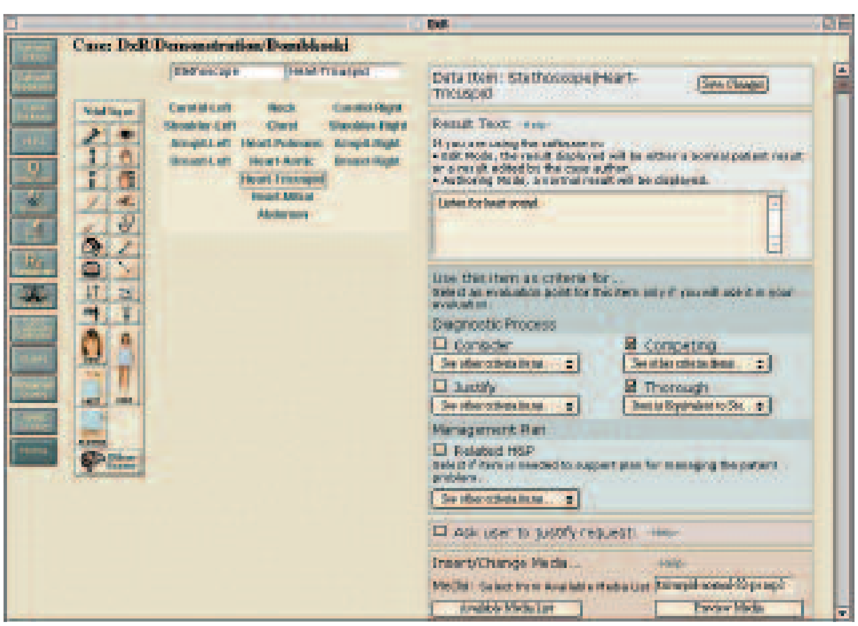


Fig. 7: Editing patient Exam results.

Lab Button

Here you may change the patient's lab results. Follow the steps below.

1. Select a lab category.
2. When the list of labs appears, select the lab you want to view/edit.
3. Click Order to go directly to the patient's results.
4. Edit the text results in the field labeled Result Text as desired and click Save Changes. You may also change other parts of this result (see below).

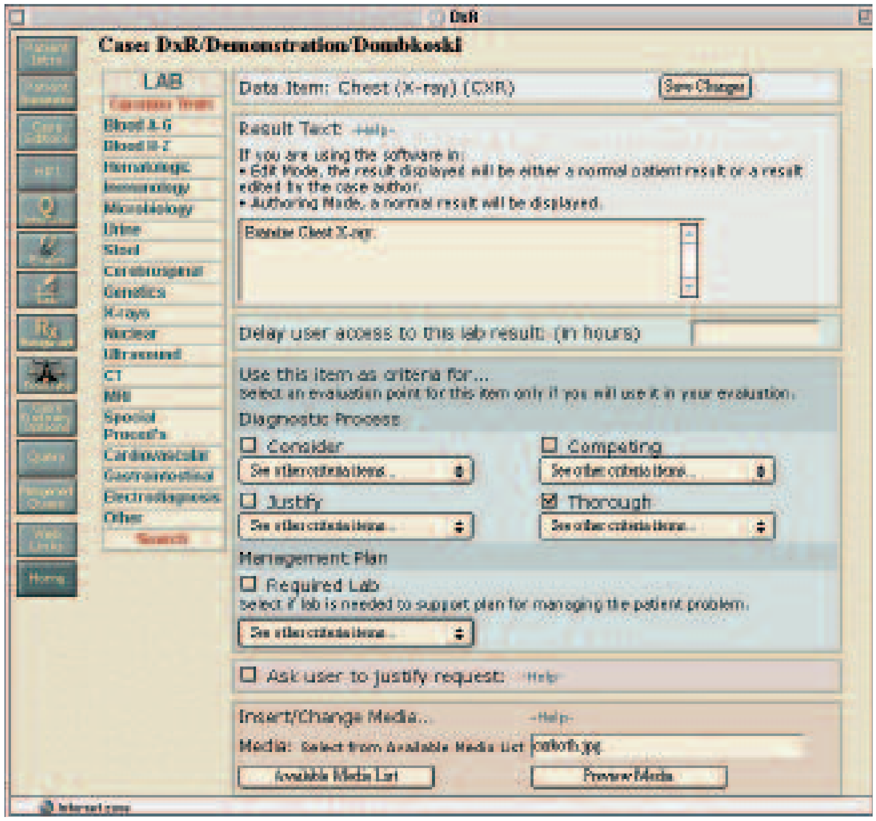


Fig. 8: The Lab Category screen for editing patient data.

- Determine whether the result of this lab test should be delayed until after the student enters a final diagnosis and management plan. If you decide to delay the lab results, you must also activate this function in the Case Delivery Options portion of editing this case.
- Determine whether this lab test should be one of the criteria items to evaluate student performance in either the Diagnostic Process evaluation or the Management Plan.
- Check the box marked Justify to ask students to justify their request for this lab test. If the "justify request" box is already checked, click on the checkmark if you want to remove the prompt to justify the selected item (see Justify note).
- Determine whether to include media or Web-based learning resources to appear when students order this test. See pages 14 & 15.
- Determine if the student must type in an interpretation of this result when it becomes available.
- **Optional, when an interpretation is required:** Type the text of an expert opinion in the field marked Consult. A student will be allowed to view the information from this text field only after he/she enters an interpretation of the lab item associated with the text/media result.
- Edit as needed the text displayed in the Normal Result field. This text will be displayed to students when they click the Test Info button or the Normal button when selecting lab tests.
- If you want to change Lab Cost, edit that information in the field labeled Lab Cost. The editable text in the Lab definition field includes a description the lab test and what it is used for, followed by what an abnormal result might indicate. The text that appears in the Definition field will have a pipe symbol "| "following the description of the lab. To change the Test Description, edit the text before the pipe symbol. Edit the information after the pipe symbol "| "to change what a lab result of Abnormal Indicates. Please do not remove the "|" symbols.

5. Click Save Changes after you've made all the desired changes.

Criteria Note

Click the See Other Criteria Items button below each of the evaluation points to see a list of the items already selected as criteria for that node. You can also use this button to make the item you are editing equivalent with a criteria item already in the list.

JUSTIFY NOTE

Most requests to justify a particular item will occur in the lab category, often to prompt the students to weigh the potential benefit of ordering a lab test. If you want students to justify requesting a lab, you must select the lab test, and then click inside the Ask User to Justify box. When the checkmark appears, the Justify prompt has been activated.

Management Button

The Management button allows you to enter questions that will appear when the student makes certain management selections.

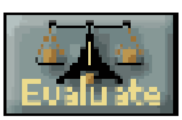
Please note that this button doesn't allow you to edit the management plans. To edit the management plan, use the evaluate button and then locate the item you would like to edit.

The Management Section contains no responses/results to edit, but does allow you to enter questions that will appear when the student makes certain selections.

1. Select the category from the list on the left. A list of available management options within that category will appear.
2. Highlight the option that you are interested in and click Edit. You will now see a list of Question Options.
3. If you select No Question, the student will not be prompted with any question when selecting this item. If you leave the Default Question marked, then the question "What would be the purpose of this?" will appear if the student chooses this item. The cases are preset with the Default Question selected unless the case author has entered a Custom Question in its place. You may select Custom Question to enter your own question. If you make changes, click Save.
4. Determine whether the management item that you've selected should be a criteria item for the management plan. To make the item a Required item, click the Required box. To make the item a Recommended management item, click the Recommended box. .

(Optional) To make the item equivalent to one of th existing management criteria items, click the Required or Recommended menu and select the management item that your new item equates to. Make sure the appropriate Required or Recommended box is also checked.

After you are satisfied with your changes to patient information in a D$_X$R case, you may select another type of information to edit or return to the D$_X$R Management Index screen.



Evaluate Button: Editing Evaluation Criteria

Before you edit the criteria for evaluating student performance, it's best to understand what is being assessed at each evaluation point, how it's being assessed, and how your changes may affect student scores. The pages that follow first deal with how student performance is evaluated (pages 20-26) and then with editing the criteria that provide the basis for the evaluation (pages 27–33).

How D$_X$R Clinician Evaluates Students' Performance

D$_X$R Clinician provides you with both qualitative and quantitative evaluations of a student's performance in working through a simulated patient case. For example, the student's Level of Diagnostic Reasoning performance is expressed as a qualitative description as well as a numeric value. Additionally, D$_X$R Clinician renders numeric scores for Clinical Reasoning, Management, and Content Knowledge. These four scores are weighted and then combined to produce the **Overall Performance Evaluation Score**. (See the Record Utility section of this manual for more information.)

For the **Clinical Reasoning Score (CRS)**, students will receive points for achievements in the clinical investigation, including considering the correct diagnosis as part of their listed diagnostic hypotheses, arriving at the correct diagnosis, and selecting the investigative items from the patient information needed to justify the correct diagnosis and rule out competing hypotheses.

The **Level of Diagnostic Performance** is a descriptive, qualitative measure based on the items the student includes in his/her investigative inquiry. The Diagnostic Performance Level evaluation is governed by a paradigm that eventually classifies a student's performance by one of ten descriptions. Each of these descriptions is assigned a value between zero and 100.

Please note the student's performance in selecting **Management** items for the patient case is scored separately on a numerical basis in four subcategories. Later in the Record Utility, you may assign a numeric value to the subcategories of Required, Recommended, Related H&P, and Related Lab, based on the relative importance of each category.

The student's performance in the **Content Knowledge** score is based on the instructor's assessment of performance in five areas: statement of problem, Dx justification, interpretations, rationales, and the case questions. This quantitative and qualitative evaluation allows the instructor to grade student responses in these areas and then weight them to produce a Content Knowledge Score. These four scores — Clinical Reasoning Score, Diagnostic Performance, Management, and Content Knowledge — are weighted and then combined to form the **Overall Performance Score.**

DEFINITION: Node

A node represents a point of assessment for an area or level of diagnostic proficiency.

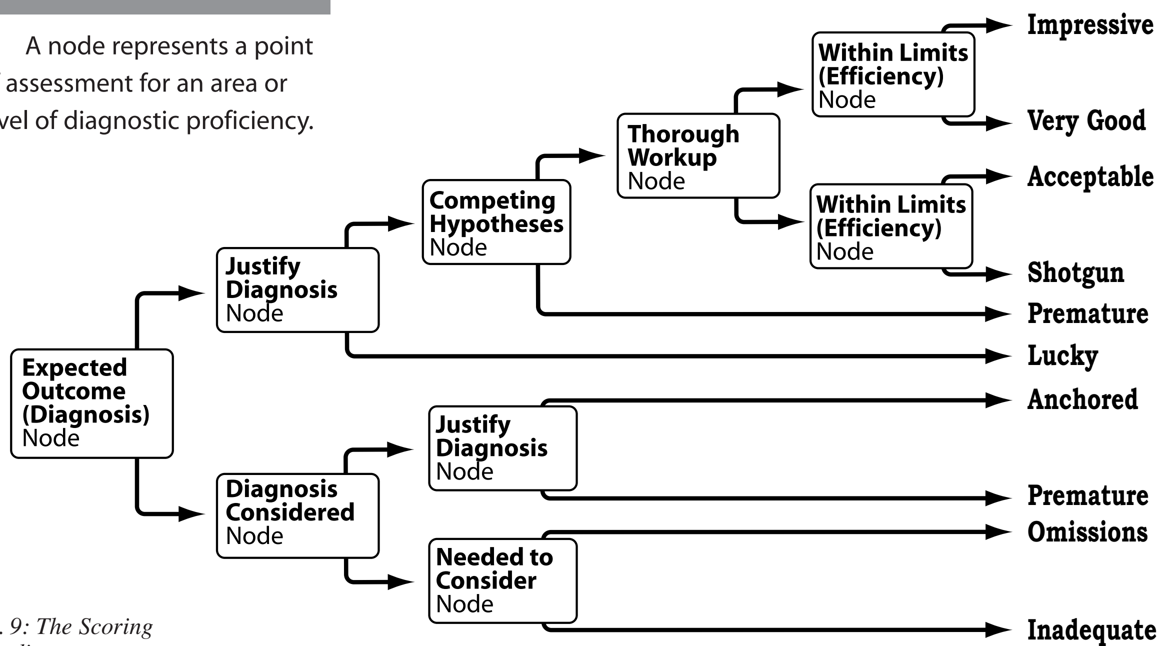


Fig. 9: The Scoring Paradigm

How Criteria Work in Evaluating Student Performance

The **Scoring Paradigm** represents a decision tree used to evaluate student performance. The evaluation of student performance begins at the diagnosis

(Expected Outcome).

To arrive at a **Level of Diagnostic Performance** students will move through a yes/no decision tree. In each branch of the tree, a student will move up only if he/she selected all the items designated as criteria for success at that node. The student will move "down" if he/she failed to enter/select all items designated as criteria for success at that node. Depending on their entries at the Expected Outcome (correct diagnosis) node, students move either "up" the paradigm toward the highest performance level (IMPRESSIVE), or "down" the paradigm toward the lowest performance level (INADEQUATE).

The criteria for each node are set initially by the case author, but can be changed using the D$_X$R Management Utility, or the Record Utility.

The **Clinical Reasoning Score** is derived from points assessed for achievements at five different nodes. They include listing the correct diagnosis among the student's hypotheses, arriving at the correct diagnosis, justifying the diagnosis, ruling in and out competing hypotheses, and doing a thorough workup. The case author and/or instructor select the items the student must include at each node to receive full credit. At each of the first two nodes (Expected Outcome and Diagnosis Considered), the student will receive either all the possible points for that node or none of the possible points. At the Justify, Competing, and Thorough nodes, students who include some but not all criteria items will receive partial credit. This scoring method allows the possibility of a reasonable score for students who reach the incorrect diagnosis, but are otherwise thorough.

Definition: Criteria Items

Criteria items are responses that the case author and/or instructor designate as key items in evaluating the student's performance on the D$_X$R Clinician case. Criteria are patient items the student must list to receive **full** credit for that node of the scoring paradigm.

In describing each node, we've outlined how the student's Level of Diagnostic Performance and the Clinical Reasoning Score would be affected.

Expected Outcome Node (Diagnosis)

At this node, the question is "Did the student include all the required Parts of the correct diagnosis?"

Within the $D_X R$ program, students enter their expected outcomes (diagnoses) as free-entered text. The software searches the text of the students' entries for key words and phrases that match the case author's/instructor's standards. Since some diagnoses are complex or multifaceted, the software allows the case author or instructor to enter up to five sets of synonyms (key words or phrases) to define the expected outcome (diagnosis). All are considered "Parts" of the expected outcome, but some may be considered more significant than others in describing the diagnosis. One of the parts of the correct diagnosis must be marked as Required for success at the Expected Outcome node. A student must include one of the synonyms for all required parts of the correct diagnosis to move up the evaluation paradigm. (Parts which aren't marked as required are evaluated in the Thorough node.) Depending on the educational level of students, you may choose to require only certain Parts at this point in the evaluation process.

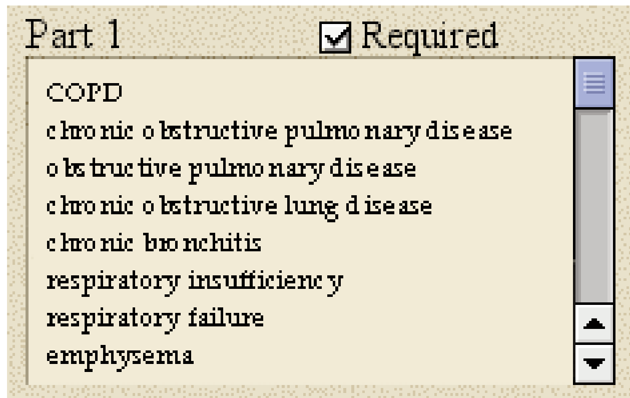


Fig. 10: A required part of the diagnosis.

For the Level of Diagnostic Performance: To move up the paradigm students must include in their diagnosis at least one synonym from all required Parts of the correct diagnosis. If so, the student will move up the evaluation paradigm to the Justified Diagnosis node.

If the student failed to list at least one synonym from each required Part of the correct diagnosis, he/she will move down the evaluation paradigm to the Diagnosis Considered node.

Student's Diagnosis	Program's Evaluation	Explanation
"The patient seems to have chronic obstructive pulmonary disease."	Accepted	This diagnosis is accepted because it matches one of the equivalents entered by the case author or instructor.
"This patient has chronic asthmatic bronchitis leading to pulmonary hypertension, causing right atrial enlargement, and right ventricular hypertrophy."	Rejected	Rejected because there is no reference to chronic asthmatic bronchitis in the equivalents entered by the case author or instructor. Chronic bronchitis is listed as an equivalent, however, chronic asthmatic bronchitis is not. Instructors can use the Record Utility to correct a student's score to account for alternate wording.
"The patient has a emphasema."	Rejected	The diagnosis is correct, but it is rejected because of a misspelling. Instructors may use the Record Utility to correct a student's score to account for spelling errors.

Fig. 11: An example of how the DxR Clinician program evaluates the diagnosis.

For the Clinical Reasoning Score: Students who enter all required Parts of the correct diagnosis from their hypothesis lists will receive the points assigned for both expected outcome (default total points possible = 10) and for the Diagnosis Considered node (default total points possible = 40), since the student both considered and chose the correct Expected Outcome.

A student who fails to enter all required Parts of the correct diagnosis won't receive any of the points assigned to the Expected Outcome node, but would move down the decision tree to the Diagnosis Considered node for examination of his/her hypothesis list.

D_X Considered Node

At this node, the question is "Did the student list ALL required Parts of the Expected Outcome in his/her list of diagnostic hypotheses?"

Here the student's complete hypothesis list is examined to see if the student considered all required parts of the Expected Outcome in his/her hypothesis list.

For the Level of Diagnostic Performance: If the student considered all required Parts of the Expected Outcome, he/she will next move to the Justify Diagnosis node.

If the student failed to do so, he/she will move down the decision tree to the Needed to Consider node.

For the Clinical Reasoning Score: Students who included ALL required Parts of the Expected Outcome in their hypothesis lists will receive all points assigned to the Considered node (default total points possible = 40).

Students who omitted any of the required Parts of the Expected Outcome won't receive any points for the Diagnosis Considered node.

Needed to Consider Node

At this node, the question is "Were there sufficient clues to enable the student to consider the correct diagnosis?"

If the student neither chose nor considered the correct diagnosis in his/her hypothesis list, the student's record is examined at the Needed to Consider node for key elements that should have led the student to at least consider the Expected Outcome. Information used to answer this question comes from the student selections for history, physical, and lab which should clearly lead an investigator to consider the correct diagnosis as a diagnostic hypothesis. This list of clues should not be exhaustive. It should, however, contain the fundamental items that together point to the correct diagnosis.

For the Level of Diagnostic Performance: If the student **didn't** select the items that would have provided sufficient clues to consider the Expected Outcome (Diagnosis), the student's performance may result from an inability to frame the problem, usually associated with a cognitive knowledge deficit. His or her Level of Diagnostic Performance would be labeled "Inadequate."

If the student **did** include items that would have provided sufficient clues to consider the expected outcome but still failed to consider the correct diagnosis, his/her Level of Diagnostic Performance would be described as having Omissions. The failure to consider the correct diagnosis could point to a misinterpretation of the available clues. Such misinterpretations may point to a cognitive knowledge deficit and/or a lack of competence with specific performance objectives (e.g. interpreting heart sounds).

If the student correctly interpreted the available clues but still didn't consider the correct diagnosis, then his/her error probably results from ignorance of the disease process and/or a processing error (omission, inadequate synthesis, wrong synthesis). The student's free text responses to key items may provide insight in pinpointing the cause of the error.

For the Clinical Reasoning Score: There are no points assigned to this node for the Clinical Reasoning Score.

Justify Node

At this node, the question is "Did the student include all questions, physical exams, and lab data necessary to justifiably arrive at the correct diagnosis?"

The Justify node appears at two points on the evaluation paradigm. The questions, physical exams, and lab data listed as criteria at this node should represent the basic information necessary to justify the Expected Outcome. The data assessed here do not represent the ideal workup.

For the Level of Diagnostic Performance: If the student's choices **are** sufficient to justify the correct diagnosis, but if the student failed to reach that diagnosis, his/her Level of Diagnostic Performance would be "Anchored."

If the student choices **aren't** sufficient to justify the correct diagnosis and if the student failed to arrive at the correct outcome, his/her Level of Diagnostic Performance would be "Premature."

Students who reached the correct diagnosis but whose investigative choices didn't justify those conclusions would see their Level of Diagnostic Performance described as "Lucky," meaning he/she arrived at the Expected Outcome by a lucky guess.

Students whose investigative choices provided a sound basis to justify their selection of the correct diagnosis move "up" the Scoring Paradigm to the Competing node.

For the Clinical Reasoning Score: Students will receive credit based on the number of the designated criteria items for this node that he/she included. For example, if the student included two of the four criteria items listed for the Justify node, he/she would get half the possible points for the Justify node (default total points possible = 20).

Competing Node

At this node, the question is "Did the student include all criteria items needed to rule out competing hypotheses?"

The paradigm works best if the criteria set for this node evaluate a student's choices in investigating the most important or most likely other hypotheses or diagnoses. Clearly, if students are expected to consider or rule out all possibilities in a complete differential diagnosis, virtually no student would successfully pass through this filter.

Example: In the case of a boy with knee arthritis, the Expected Outcome might have been juvenile rheumatoid arthritis. Other diagnoses for consideration might have been Lyme disease and rheumatic fever. Criteria entered at this point could reasonably include questions about exposure to insects, a question about the presence of a rash, an ASO titer, a Lyme titer, questions about fever and taking the boy's temperature as part of the physical exam.

> **For the Level of Diagnostic Performance:** If the student included all criteria items in ruling out competing hypotheses , the student moves "up" the paradigm to the "Thorough" node.
>
> If the student failed to include all the criteria items in ruling out competing hypotheses, the student will attain a rating of Premature for his/her Level of Diagnostic Performance.
>
> **For the Clinical Reasoning Score:** Students will receive credit based on the number of the designated criteria items for this node that he/she included. For example, if the student includes half the criteria items, he/she would receive half the points possible for the Competing node (default total possible = 15 points).

Thorough Node

The question at this node is, "Did the student's selections include all other criteria items that haven't been evaluated elsewhere, but which are deemed essential for a thorough workup?"

The evaluation standards set for a thorough workup are usually what would be expected of a resident completing a primary care residency. The information evaluated at this node assesses the questions, physical exams, laboratory tests, and ancillary diagnoses considered essential for a thorough workup. Items evaluated here should include questions, exams, labs, treatment, and diagnoses that are expected, but which haven't been previously selected at other nodes. This includes one synonym from all other parts of the diagnosis that weren't marked as "required" for the Expected Outcome.

> **For the Level of Diagnostic Performance:** If the student entered all the criteria items for this node and all the parts of the diagnosis (required and non-required), the student will have the opportunity to move "up" the paradigm to the highest performance level, depending on his/her rating at the Efficiency Node.

If the student failed to include all the criteria items for this node all the parts of the diagnosis (required and non-required), he/she won't be able to attain the highest level of performance on this particular D_XR case. In this case, the student's Level of Diagnostic Performance also depends on how he/she is rated at the Efficiency Node.

For the Clinical Reasoning Score: Students will receive credit for the number of the designated criteria items for this node that he/she included. For example, if the student includes half the criteria items, he/she would receive half the points possible for the Thorough node (default total possible = 15 points).

Efficiency Node (Within Limits)

At this node, the question is "Did the student stay within the efficiency limits set by the case author and/or instructor?"

One characteristic of an expert clinician is the ability to arrive at a correct diagnosis efficiently. To discourage an unfocused approach to the clinical investigation process, you may place limits on the numbers of questions that should be asked, exams that may be performed, and lab tests that may be given in a particular case.

For the Level of Diagnostic Performance: If the student stayed within the set efficiency limit and still conducted a thorough workup, he/she will achieve the highest Level of Diagnostic Performance, which is Impressive.

If the student exceeded limits but conducted a thorough workup, his/her Level of Diagnostic Performance will be Very Good.

If the student stayed within the efficiency limits but didn't achieve a thorough workup, his/her Level of Diagnostic Performance will be Acceptable.

If the student exceeded limits and failed to conduct a thorough workup, his/her Level of Diagnostic Performance will be described as Shotgun, denoting a "shotgun" approach to the clinical investigation.

For the Clinical Reasoning Score: If students exceed efficiency limits, points will be **deducted** from their Clinical Reasoning Scores. See the chart below. Deductions are proportional to the extent to which students exceed limits.

Now that you understand how the students' performance is evaluated, you can manipulate the criteria as you wish.

Exceeding the Limit on Interview Items	Exceeding the Limit on Exam Items	Exceeding the Limit on Lab Tests
1 point off plus 1 for every 3 questions over the limit	1 point off for exceeding limits and a one-point deduction for every 3 question over the limit.	2 points off for every lab over the limit
Max deduction: 5 points	Max deduction: 5 points	Max deduction: No limit

Fig. 12: Details of scoring at the Efficiency node.

Editing Case Data – Changing Evaluation Criteria

Evaluate Button: Editing Evaluation Criteria

You can change the evaluation criteria for a case on-line just as you can edit Patient Data. The following pages explain the process of changing the online evaluation criteria for a D_XR case. (You can also change evaluation criteria in the Record Utility while analyzing student records. See the Adjust Criteria section of this manual for more information.) On the D_XR Management Utility Index screen, click Edit Case Data. Select and enter the case you would like to edit. Click Evaluate. You will see a row of buttons, corresponding to each part of a D_XR Clinician case. On the next few pages we explain how to edit criteria for each section.

Paradigm Values: D_XR Clinician provides different forms of evaluation, but paradigm values affect only the Clinical Reasoning score (these scores should total 100 points).

Preset point values for the nodes included in the student's Clinical Reasoning Score are shown (see Detail Note). You may change the numbers here or in the Record Utility. Click Save Changes when you are satisfied with your entries.

See the Adjusting Evaluation Criteria section of this manual for information on changing paradigm values in the Record Utility. (See p. 36)

Diagnosis Button

Click Diagnosis to set the criteria for the Expected Outcome.

The Expected Outcome should include the diagnosis, but may also include other information the case author deemed important.

1. Edit as need the concise diagnosis, which includes all components of the diagnosis. This information is displayed to the student during the Initial Self-Assessment at the end of the case.
2 List each component of the Expected Outcome (Diagnosis) separately in the fields marked Part 1, Part 2, etc. (5 or fewer parts). Most cases will have only one or two parts to the correct diagnosis, but space is provided for up to five.
3. Add any acceptable synonyms to each Part, listing each synonym on a separate line. Include as many synonyms or equivalents as possible. This will give the student greater latitude in having a diagnosis scored correctly. For scoring purposes, each synonym is considered equivalent to all other items in that Part. The student's diagnosis must contain one of the synonyms listed for that Part to receive credit.
4. To edit any part of the Expected Outcome, highlight the text you want to change, delete it, and type in the new text. Click Save Changes.
5. Indicate each Part of the diagnosis that will be Required. The Parts checked as Required will be used in evaluating the first node, the Expected Outcome. The others become part of the criteria for the Thorough level. You must check Required for at least one Part of the Diagnosis. If you do not check at least one component of the diagnosis as Required, then any diagnosis entered by the student will be scored as correct.

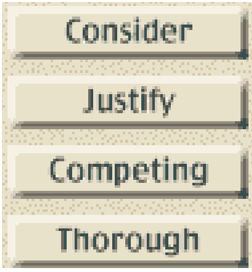
Optional: You can provide immediate feedback to the student in the form of a brief discussion of the diagnosis if you wish. You may edit the existing text or simply add your discussion text in the field labeled "Expected Outcome." Students can access this information by clicking the Expected Outcome button on the Initial Self-Assessment screen which appears after they have completed the case.

DETAIL NOTE

Diagnosis Considered = 40 points
Expected Outcome = 10 points
Justify Diagnosis = 20 points
Competing Hypotheses = 15 points
Thorough Workup = 15 points.

PRINT CRITERIA

You can click the Print Dx Criteria button to print all criteria associated with the Diagnoses, including your edits.
Click Print Rx Criteria to print all criteria associated with treating the patient (management), including any changes that you've made.



Consider, Justify, Competing, and Thorough Buttons

To review the existing node criteria, click the button for the node you want to review. A screen will appear, displaying the evaluation criteria as provided by the case author. Decide whether you want to modify any of these criteria.

To select items to add, follow these steps.

1. Click the appropriate Interview, Exam Tools, or Lab Category (top of the screen) to see the pull-down menu for each.
2. From these menus, select the proper category (e.g., from Interview you could select the category of questions you want to view. From Examination you could select the exam tool that you want the students to use).
3. Click Get Questions or Get Lab List for the Interview and Lab sections. Choose the specific question, body part, or laboratory test you want to add. Click Retrieve...from Case. You will see the patient response or the test result specific to that case.
4. You have two options in adding material to the node criteria. By clicking Add you add material as a new, separate item; by clicking 'Or' Add you add material as an equivalent. (See Helpful Hint.) If you enter many items as equivalents, the text will wrap to the next line, but all items are considered to be synonymous.
   - Option 1: Type your discussion text in the field labeled "Why this item is important." Students will see this text, along with the patient data when they view detail of this criteria item in the Initial Assessment at the end of the case.
   - Option 2: You can provide comments to your students explaining the evaluation criteria for a node in the "Category Discussion Text." To edit any existing text, highlight and delete the text you want to change and then type in the new information.
5. After editing the criteria for each node, click Save Changes. The evaluation information for the node will be written to the evaluation database on the server.

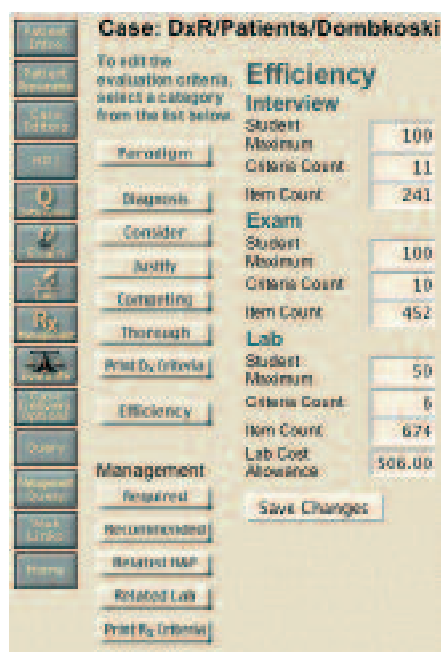
HELPFUL HINT

How do you decide whether items should be listed as equivalents? We suggest the following rule of thumb. If the student can gather the same information from several different items in the case, each item should be listed on the same line, separated by commas. For example, "Blood A-G|20," "Blood A-G|46," and "Blood A-G|54" all refer to blood sugar or glucose. If you felt that a measure of blood sugar were required you could list all three measurement methods as equivalents. If the student includes any one of these equivalents he/she would receive credit for having gathered the required information.

Efficiency Button

One characteristic of an expert clinician is the ability to arrive at a correct diagnosis efficiently. To discourage the student from an unfocused approach to the clinical investigation, a limit is set regarding the number of interview questions, exams, and lab tests that may be ordered before an "efficiency warning" is given. Cases include default limits for all these items. The limit should be broad enough to allow for a reasonable, thorough investigation, but confined enough so that a student merely going down the list of available choices would encounter dialog boxes warning, "You have __ more questions (exams, labs) before your overall efficiency will be affected." Students will be allowed to request additional questions, exams, and lab tests beyond the efficiency limit. However, it will affect a student's efficiency scores if he/she exceeds the limits. Efficiency scores may affect the Level of Diagnostic Performance that the student achieves, as well as the Clinical Reasoning Score.

Fig. 13: Editing Efficiency limits for a DxR Clinician case.



Criteria Count: If you have added or deleted any criteria items from the various nodes (Consider, Justify, Competing, and Thorough), change the criteria count of interview questions, exams, and lab tests to reflect your changes, making sure to exclude duplicates. Click Save Changes when you are finished editing.

> **Note:** The information entered in the Criteria Count **at the time the student completes the case** will determine the information displayed to the student in the Initial Self-Assessment at the end of the case, so it's a good idea to make these adjustments before you make the case available to students. (These values are rechecked and automatically set by the Record Utility when records are imported.)

Student Maximum: Preset counts are shown but may be edited.

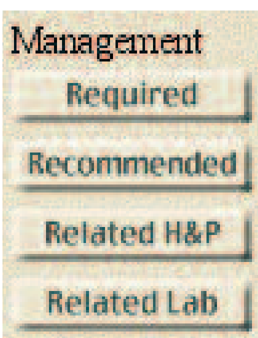
1. Enter the total number of interview questions, exams, lab tests, and management options that students will be allowed to request before exceeding the efficiency limits.
2. Click Save Changes when you are finished editing.

Item Count: The Item Count entries show the total number of items available in the D_XR Clinician database. Do not change these numbers.

Lab Cost Allowance: This is the total dollar amount allowed for lab tests ordered by a student. The preset amount is shown and can be edited. Remember that all lab tests count as individual items. There are no "panels" of lab tests that can be ordered in the DxR Clinician database. The information on whether students exceed the lab cost allowance will be reported to you in the Record Utility.

If you have added labs or changed the costs of lab tests, you may want to adjust the Lab Cost Allowance.

Click Save Changes when you are satisfied with your entries.



Management

In this section, you may set the criteria that will be used to evaluate the student's patient management plan. Patient management items are divided into four categories. They are Required, Recommended, Related H & P, and Related Lab. Students will be evaluated based on entries that match the criteria you set for each category. Later, in the Record Utility, you will set point values for each of the four categories of the management plan. The preset point values total 100. Below is a discussion of the types of items that you should list for each of the four areas. (For instructions on editing the point values assigned to the four management areas, see the instructions for Adjusting Evaluation Criteria on p. 36)

Management Discussion Text

In the Management Discussion Text field that appears below the criteria for Required, Recommended, Related H&P, and Related Lab, you can type in text that explains the issues in managing this patient's problems. This discussion text may explain why certain management choices are appropriate or inappropriate for this patient.

PRINT CRITERIA

Click Print Rx Criteria to print all criteria associated with treating the patient (management), including any changes that you've made.

You can click the Print Dx Criteria button to print all criteria associated with the Diagnoses, including your edits.

Required Button

This area should contain only the treatment criteria items that you would consider necessary for a student to receive a satisfactory score on his/her treatment plan. Select only items from the Management pull-down menu.

Recommended Button

This area should contain additional treatment criteria items that would be included in a more complete treatment plan. Select only items from the Management pull-down menu.

Related H&P Button

The criteria listed here should include Interview and Exam items that the student needs to investigate in relation to the management items selected. For example, if the student were prescribing medication for the patient, he/she would need to ask about allergies, current prescriptions, and over the counter medications currently used. These items may or may not be considered when the student is making his/her diagnosis.

Fig.14: Editing criteria for the Management section of a DxR Clinician Case.

Related Lab Button

The criteria items listed here should include all items from the lab section that the student needs to investigate in relation to the management items selected. For example, you may think it's important to order an EKG or CXR before consulting with a cardiologist. These items may or may not be considered when the student is making his/her diagnosis.

Deleting Management Criteria

To delete a management criteria item, click the appropriate Required, Recommended, Related H&P, or Related Labs button. In the field labeled Evaluation Codes, highlight the code of the item that you want to delete, and click Save Changes.

When you are satisfied with your changes to each section of the evaluation criteria, click Save Changes. You can return to the D$_X$R Management Utility Index screen (click Home) or continue the process of editing case data by changing how the case is presented to students.

Edit Case Data – Presentation Options

You can use the Case Delivery Options Query, and Management Query buttons to determine how the case is presented to the student. From the D$_X$R Management Utility Index screen, click Edit Case Data and then click one of the three buttons .

Case Delivery Options Button

Access Preferences

Interview: Check to allow access to the interview section of the case.

History of Present Illness: Check this box to allow users to review the HPI information, replacing the Present Illness category in the Interview.

Exam: Check to allow access to the exam section of the case.

Lab: Check to allow access to the lab section of the case.

Show Normal: Check this box to automatically display the normal values along with the result of each lab ordered. If you don't check this box, students will still have access to normal results by clicking the Normal button.

Delayed Labs: Check the Delayed Labs box if you would like the results of some lab tests to be delayed, simulating what happens in a real clinical setting. The results of these tests will be given to students once they make their final diagnosis. They are then given the opportunity to change their diagnosis and management based on the results of the delayed tests.

Lab List: Click Lab List to allow students to group a series of lab tests together and order them as a group.

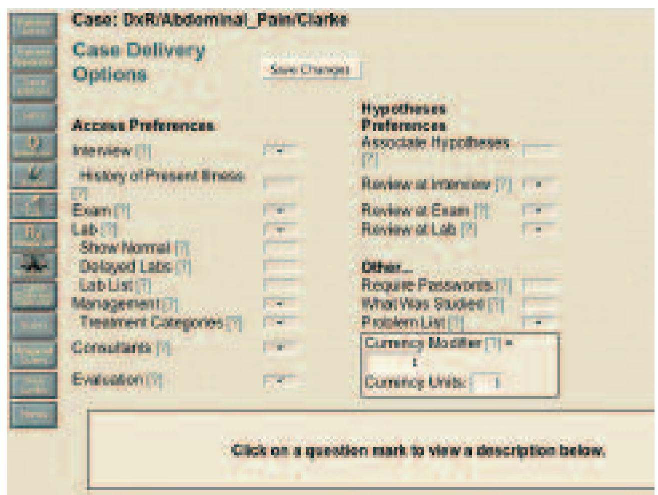


Fig. 15: Editing case delivery options.

Management: Check to allow access to the management section of the case.

Treatment Categories: Check this option to allow access to the ten treatment categories used to develop a management plan. Users must select a treatment mode (In Hospital or Out Patient) before treatment categories are available.

Evaluation: Check to allow access to the initial assessment at the end of each case.

Consultants: Check to allow access to consultant information contained within the case.

Hypotheses Preferences

Associate Hypotheses: Check Associate Hypotheses if you want the students to specify the hypothesis they are pursuing each time they request an interview, physical exam, and lab item. The ability to force the students to associate each inquiry item with a specific hypothesis may provide insight into the student's clinical reasoning.

Review at...: For each Review At box you check, students must enter or review their diagnostic hypotheses and problem statement before beginning that area of the investigation.

If you check the Review at Interview box, students will be allowed access to questions in the first Interview category ("Present Illness" or the summary of the History of the Present Illness). However, they must enter their diagnostic hypotheses before accessing other categories in the Interview section.

Other…

Require Passwords: Check Require Password if you want students to enter an assigned Password instead of a name to be able to enter a D_XR Clinician case.

What Was Studied: Check to ask students to list any resources or references conducted while he or she was away from the patient case.

Problem List: Check this preference to require students to make a list of all issues that are pertinent to the holistic care of the patient , other than the chief complaint. If you check this option, students will be able to enter their problem list at any time while working through the case, but they will not be prompted to enter their problem list until they are preparing to enter a final management plan for the patient.

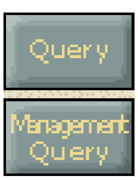
Currency Modifier - The current lab list contained in this program has a relative cost for each lab test, displayed in US dollars. Use this option to alter the dollar amounts by a multiplier. For example, if you would like to increase the lab costs contained in this program by 50%, you would type in a multiplier of 1.5 and click Save Changes. The updated cost will be displayed when the student requests Lab Info and listed on their case evaluation.

Currency Units - If you are teaching students who are not accustomed to expressing costs in US dollars, you may change the units to something more readily understandable. In the Currency Modifier field, enter the current exchange rate for 1 US dollar. In the Currency Units field, type in the currency symbol. Click Save Changes. The new listings will be displayed when the student requests Lab Info and the cost in your chosen monetary units will be listed in the student's case evaluation.

NOTE

When adjusting the cost/currency please remember to adjust the lab cost allowance displayed when you click Evaluate/Efficiency, since these costs will be reflected in the Record Utility. However, neither method will reflect updated numbers/currency under labs in the management utility.

Query and Management Query Buttons



You may wish to ask students questions at various points in their investigation to enrich their experience in working with a D_XR Clinician case and to stimulate their diagnostic thinking. You can link your questions to specific investigation items using the online query utility. When the student selects an item linked to your question, the patient's response (or test result) will be displayed first and then the student will be alerted that your question will appear. If the student does not select the investigation item to which your question is linked, the question will still be asked, but it will appear immediately before the student enters a diagnosis.

If the student is required to make an interpretation of the data, the prompt to answer your question will precede the student's interpretation.

Query allows you to link questions to the interview, lab, or exam sections of the case.

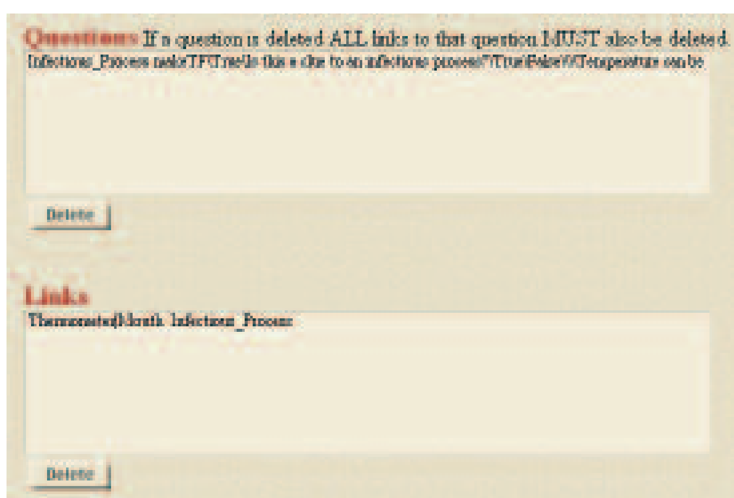


Fig. 16: Query list displaying questions for a DxR Clinician case.

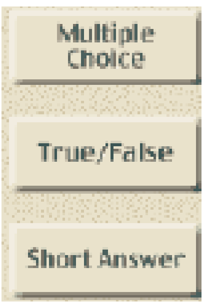
Management Query allows you to link questions to the items in the management section of the D$_X$R Clinician cases, to the Management section in general, or to one of the two treatment modes (In Hospital or Outpatient).

Follow the steps below after clicking either the Query or Management Query button.

Query List Button

After clicking on Query or Management Query, click Query List to see what questions are linked to the case you are editing. From this screen you will be able to see and remove existing questions and links. If you remove a question, the link must also be removed. If you wish to add questions, follow these steps.

Multiple Choice, True-False, or Short Answer Buttons



Choose the type of question you want to ask (Multiple Choice, True-False, or Short Answer).

a) Enter a unique Question Identifier (name or title) for your question. This can be anything that you choose.

b) To create links, select the desired category or exam tool from the pull-down menu(s) at the top of the screen. If you select from the Interview or Lab categories, highlight the specific question/lab and click Get Questions/Lab List to display your options.

Note: *If you are adding a Management Query, select a treatment category or select Treatment Area if you want to attach your question to a specific treatment mode (In Hospital/Outpatient) or if you want to attach it to the Management section in general. You will be prompted to make a selection.*

c) Select the question, body part, lab test or treatment option to which you want to link a question.

d) Click Create First Link and the appropriate D$_X$R Code will then be displayed in the links box. If you wish to create additional links to the same question, select the next question, body part, or lab desired and click Add Additional Link. If a student selects multiple items linked to the same question, the query will not be repeated.

e) Type your question in the Question box.

- For multiple choice questions: Enter up to five possible answer choices. Click the radio button corresponding to the correct answer (A, B, C, D, or E).
- For true-false questions: Indicate which of the two answer options is the correct choice by clicking the appropriate radio button.
- For short-answer questions: You will have to evaluate the student responses individually from the student record in the Record Utility.

f) Optional: To provide students with comments about the question after they have answered it, enter your comments into the Comments box. Students will be able to view this information after answering the question.

g) Click "Done" to finish creating your question and link.

Fig. 17: Entering questions linked to items in a DxR case.

Analyzing Student Records in the Record Utility

D$_X$R Clinician's Record Utility provides you with a detailed analysis of your students' performance and investigative process. Each Student Activity Record includes data on the student's selections in the various parts of a D$_X$R Clinician case. We encourage you to review the student responses, as well as the computer's analysis of the student's diagnosis and diagnostic hypotheses list. The review will help you gauge the degree of conformity between your evaluation and the computer's initial evaluation based on the case author standards. A careful review will enable you to give students more meaningful feedback on their performance. You can change the evaluation criteria and then reevaluate student performance using the revised criteria. You can also print reports for your review and for students. In addition, the Record Utility can generate statistical information regarding items in the D$_X$R Clinician database.

HELPFUL HINT

If you want to save and review student records which have previously been edited in the Record Utility, you should download a new copy of the record utility for each new group of student records that you intend to review.

Export Records

Since student records are created on the Web server but evaluated in the Record Utility which is not a Web-based application, you must export records to your local computer for evaluation. Go to the D$_X$R Management Utility at

http://webSite/DxR/DxRManag/index.html

- Click Student Record Files. Select the directory and the case within it from which you wish to retrieve records.
- In the middle of the screen, you will see an area labeled Record Status where you can select an individual record in your chosen directory and case.

  To view the status of a specific record, select it in the Select User field, then click View Record.
- **To delete a specific record**, select the user name in the Select User field, and then click Delete Record. This deletes only the record and not the user name and password associated with it. You might use this feature if you are allowing students to use the case as a practice case and want to allow them to re-enter the case after they've completed it once.
- Click Export Records and then right click (Mac users: Click and hold) the link in the middle of the screen to download student records. Records will be saved by the case name. You can also use the Windows Version and Macintosh Version links to download the Record Utility.

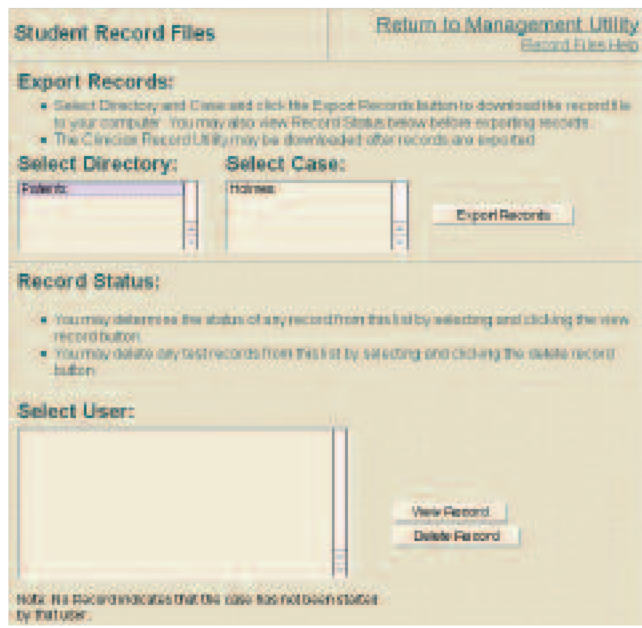


Fig. 18: Converting Record Files for import into the DxR Record Utility.

Download the Record Utility

When you select a directory and a case and click Export Records, you can download a copy of th Record Utility for grading your student records. Select either the Macintosh® or Windows® version of this utility. This will download, decode, and unstuff the utility on the Macintosh® version. For the Windows® version, a setup will be copied to your hard drive. Follow the directions in the setup to install the Record Utility on the computer. Now you are ready to use the Record Utility.

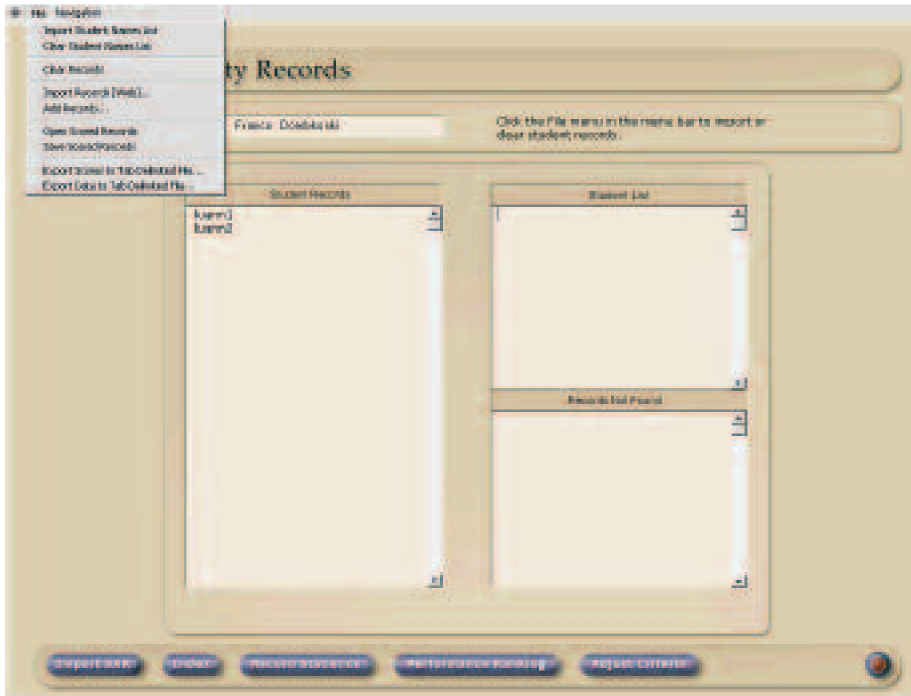
System Requirements

See page 48 for the minimum system requirements to run the DxR Clinician Record Utility.

Importing Student Activity Records

1. Open the Record Utility and click Import SAR. The Import screen allows you to control how you import student records into the Record Utility for review and evaluation. The steps you follow will differ depending on whether you are importing records for an initial review or whether you are opening the utility to review records that you have already imported.

2. Click the File menu at the top of your screen and select one of the options listed below.



- **Import student names list.** Use this option to import your properly-formatted student roster (formatted as shown on pages 10-11). The list will appear in the top field on the right side of your screen. Select **Clear Student Names List** to remove your student roster from the Record Utility.

- **Clear Records.** This option allows you to remove from the Record Utility records that were previously imported. Use this function if you have previously imported SARs for a group or a case and want to start anew in reviewing records from a different group or a different case.

Fig. 19: The Record Utility Import screen with the SAR Files menu.

- **Import Records (Web).** Use this function to import student activity records that were captured using the Web-based version of the D$_X$R Clinician software.

- **Add Records.** Do not use this option if you are importing records from the CD version. This function works only with records captured with the Web version of D$_X$R Clinician. Select this import option when you want to add student records from a D$_X$R Clinician case to those already imported into the Record Utility from the same case. Any SARs you add must come from the same case and must be captured from the same version of the program. For example, if the records already imported are from the Dombkoski case captured from the Web version, any records you add must also be from the Web version of the Dombkoski case.

- **Save Scored Records.** Create a folder on your computer where you want to save your records after you've scored them. Then, select this option to navigate to this folder and save your records.

- **Open Scored Records.** Select this option to navigate to and reopen records that you've previously scored and saved.

- **Export Scores to Tab Delimited File.** This option allows you to export the scoring data for all records in the Record Utility to an application that accepts tab-delimited formatting. This option may be useful in making spreadsheets for displaying student scores that can be used in a grade-book application.

- **Export Data to tab-delimited file.** This option allows you to export every piece of data from a D$_X$R Clinician case into an application that accepts tab-delimited formatting.

3. When you have imported a student list and then selected Import SARs, a dialog box will appear, prompting you to review the evaluation criteria for the case. Click OK to go to the Scoring Paradigm screen in the Adjust Criteria section.

Adjust Evaluation Criteria Screen

The Adjust Evaluation Criteria screen gives you control over each of the types of student performance evaluation (Diagnostic Performance, Clinical Reasoning, Management, and Content Knowledge). It also allows you to control how those component scores figure into the Overall Performance Score.

Changing Paradigm Values: Click Adjust Criteria at the bottom of any screen in the Record Utility to go to the **Scoring Paradigm**. On this screen, you can type in values that will

- change the point values assigned to the various nodal points in the **paradigm** (these values should total 100) (See note)
- customize the values assigned to each of the ten **Levels of Diagnostic Performance** (Inadequate through Impressive – highest individual value no greater than 100)
- set the **Minimum Pass Level** for each type of score (Overall Performance, Diagnostic Performance, Clinical Reasoning, Management, and Content Questions). This number represents the minimum score the student needs to receive a satisfactory performance rating for that component of the evaluation.
- set values for the four **management score components** (Required, Recommended, Related H&P, and Related Lab) to total 100 (see Note).
- designate point values (scores) for the four qualitative descriptions of the student's **hypothesis list** (no preset values are included – highest value possible is 100) to include this rating in the Clinical Reasoning Score.
- designate point values (scores) for the four qualitative descriptions of the student's **problem list** (no preset values are included – highest value possible is 100) to include this rating in the Management Score (see Note).
- designate point values (scores) for the four qualitative descriptions of the student's **Content Knowledge** (highest value possible is 100)
- set the weights (between zero and 100%, with all five weights totalling 100) to be applied to the five components of the Content Knowledge score (Statement of Problem, Dx Justification, Interpretations, Rationales, and Questions).
- determine the relative weights (between zero and 100%) for each of the **four component scores that result in the Overall Performance score**. (Diagnostic Performance, Clinical Reasoning Score, Management Score, and the Content Knowledge Score. The four weights must total 100%.)

Example: To emphasize Diagnostic and Clinical Reasoning skills and exclude the management component from scoring, you might set your weights as follows:

Diagnostic Performance	55%
Clinical Reasoning	40%
Management Score	0%
Content Knowledge	5%
Total	100%

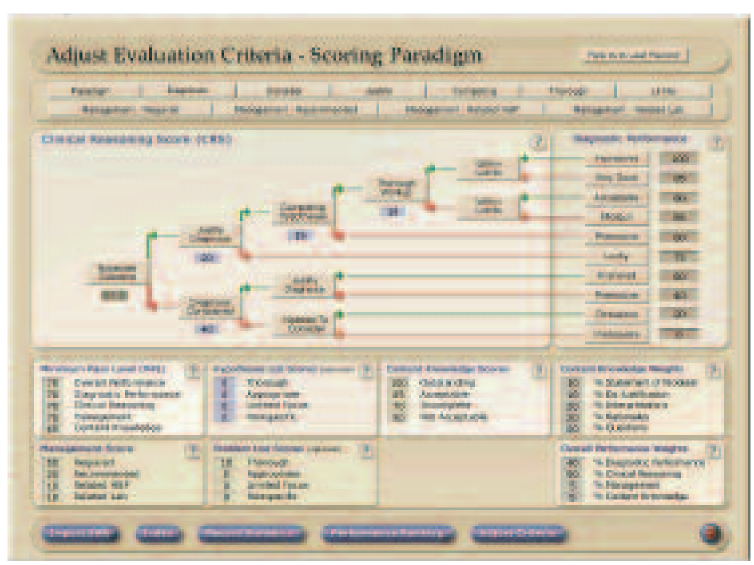
NOTE

If you choose to assess the Hypothesis List and the Problem List, you must determine how they will apply to the Clinical Reasoning and Management Scores -- either incorporating them in as part of the scores or as a potential "bonus" beyond the score's normal 100% possible.

Example: If you want to incorporate the Problem List assessment into the Management Score, you will need to adjust the scores assigned to the other Management components (Required, Recommended, Related H&P and Related Labs) so that their values, plus the highest rating for the Problem List, total 100.

However, if the Problem List assessment is a 'bonus' you don't need to make any adjustments to the other Management components. Your rating of the student's problem list would be applied above and beyond the 100% possible from the other Management Score components.

Fig. 20: The Scoring Paradigm.



Adjusting Evaluation Criteria: Click a button from the top of the Scoring Paradigm screen to see the criteria items listed for the corresponding category or node. (You can also use the buttons within the Paradigm to navigate to the corresponding category or node.)

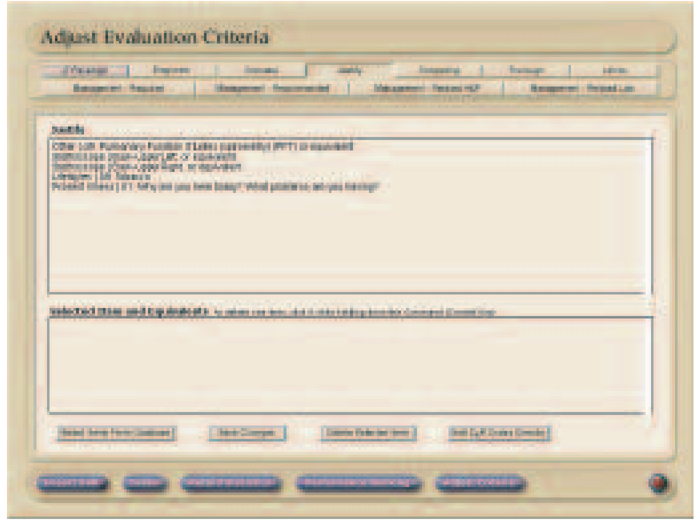
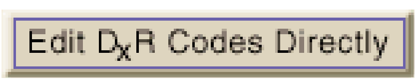


Fig. 21: Review/edit evaluation criteria on the Adjust Evaluation Criteria screens.

- Click Diagnosis to see and/or edit the text of the expected outcome and its Components. If you edit this listing, it will alter the criteria used to evaluate **all** student records for this case. If you choose, you can mark additional parts of the Diagnosis as “Required” or remove the “Required” designation from those you previously marked as required. You can also add synonyms to any parts of the diagnosis.
- Click Consider, Justify, Competing, Thorough, or Limits from the top of the Consider Paradigm screen to see the criteria for the corresponding category or node. Change the evaluation criteria as necessary. You may alter any of the criteria, but you must be careful to use the correct form. Choose one of the two methods shown below for adding criteria items.

Click the Select Items from Database button, then select a pull-down menu from the top of your screen. A list of the items in the database for that category and/or tool will appear. Select the appropriate item from the pull-down menu. The item will be preceded by its item code. Click New to list the item as a separate new entry, or Equivalent to list the item as an equivalent of an item already listed. Click Save Changes to permanently save your edits.



Click the Edit D_XR Codes Directly button to add items by free text entry. Use this option **only** if you are familiar with the appropriate D_XR item code. Most Exam codes are the name of the exam tool followed by the appropriate body part. However, other codes are a bit less predictable. Make sure you have entered the proper code before you save changes. Each criteria item should be listed on a separate line. You should list Equivalents on the same line, separated by commas. Click Save Changes to permanently preserve your edits.

You may move items between nodal points by cutting and pasting them. Delete items by selecting them and clicking Delete Selected Item.

Management: Click Required, Recommended, Related H & P, or Related Labs to change criteria items within each of those categories of the Management section by the two methods explained above (Select Item from Database or Edit D_XR Codes Directly). Remember, Required and Recommended categories should contain only management items from the patient case. Related H & P may contain Interview and Exam items, while Related Lab should contain only Lab items.

Limits: Click Limits on the Adjust Evaluation Criteria screen to see the Criteria Counts for each node. You can also change the lab cost allowance by typing in a new value. Click Update Criteria Counts to update the number(s) to reflect the criteria changes you have made in adding or deleting criteria items from the various nodes. (This information will also be updated on the Student Record screen.)

Index Screen

The Index screen can be used to navigate to a specific student's records or to print the records of individuals or groups of students.

To navigate to an individual student's record, click the student's name in the Complete Record List. The program will go to the Student Record screen for that student.

To access the Index window, click Index at the bottom of any screen in the Record Utility. The Complete Record List includes the names of all students whose records have been imported into the Record Utility. Check the Hide Names box if you do not want students' names to be displayed on the Student Record Screen. Below the Complete Record List a print menu allows you to select from several printing options that apply to all records in the list.

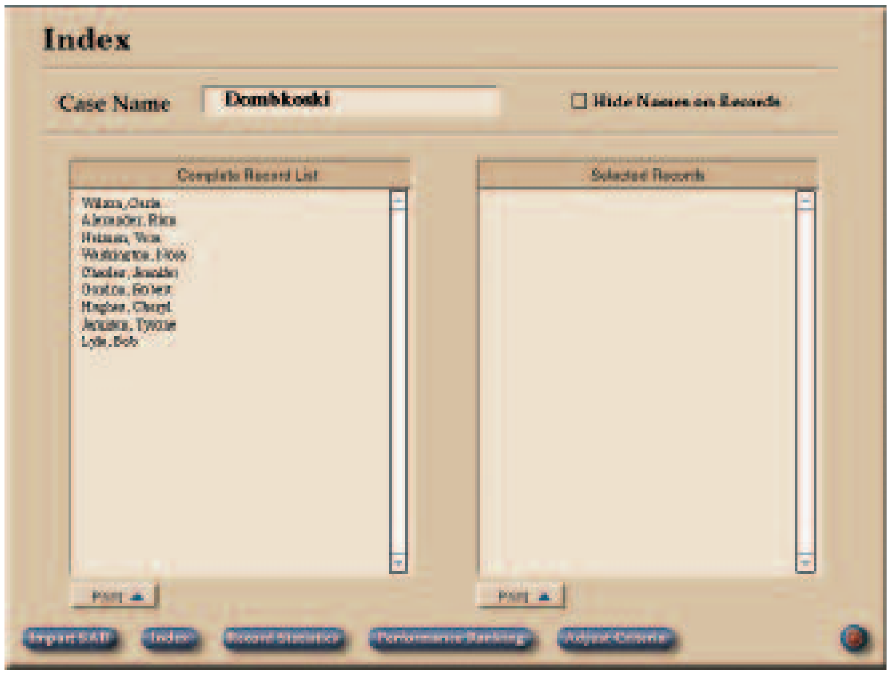


Fig. 22: The DxR Clinician Record Utility Index screen.

The Selected Records window will display the names of students as you select their records for printing. To place a student record in the Selected Records list, click the student's name in the Complete Record List while holding down the ALT (option) key. The student name will appear in the field below the heading Selected Records. Below the Selected Records list, a print menu allows you to select from several printing options that apply to all selected records.

Note: See page 47 for a list of and description of the printing options.

Examining an Individual Student's Record (Student Record Screen)

Each Student Activity Record (SAR) contains a complete record of that student's patient investigation as well as the computer's evaluation of that record. To navigate to an individual Student Record Screen click the Index button at the bottom of any screen in the Record Utility. You will see a list of the student records currently in the utility.

Click the name of the student whose record you want to see. Use the arrow keys on the keyboard or the arrow buttons at the bottom of the screen to move from one record to another.

Sections of the Student Record Screen (descriptions through page 43)

Student Record Information and Summaries

Use the buttons at the top of the screen to display the following information:

Complete Record: A complete item-by-item list of the student's investigation, including the time of each selection or entry.

Items RE: Diagnosis: Items linked to the Diagnostic Hypothesis and eventually chosen as the basis of the diagnosis.

Items RE: Hypotheses: All inquiry items listed according to the Diagnostic Hypotheses the student associated with that hypothesis.

Missing Items: The evaluation criteria that the student did not request/select. Click the specific category to see the specific criteria items within that category that the student omitted.

Follow-up: The issues recorded by the student on the management confidence screen.

Notes: The student's personal notes and SOAP notes.

Print: Click Print to see/select your printing options. See page 47.

Delete Record: Click Delete Record to remove the student record from the Record Utility. You can download the record again from the D$_X$R Management if you choose.

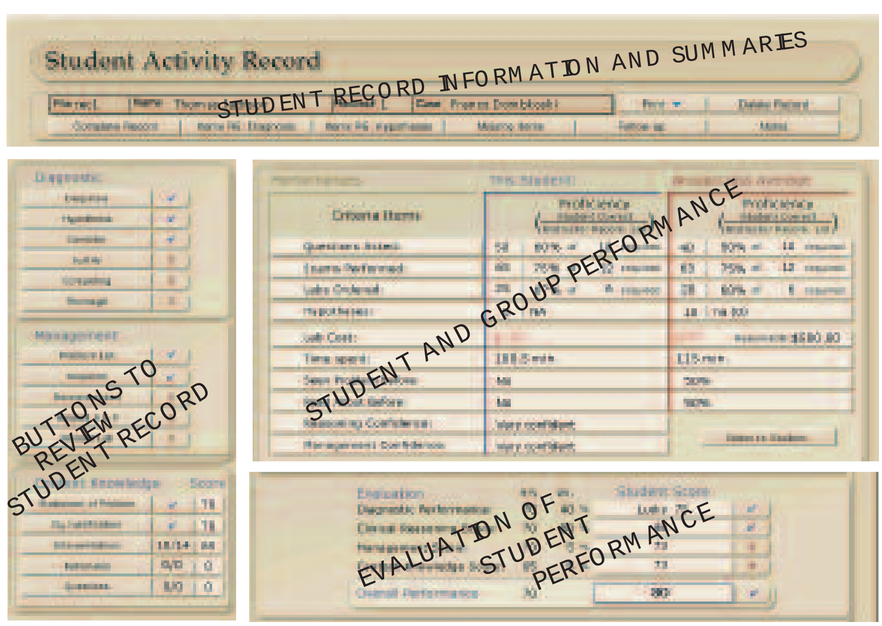


Fig. 23: Sections of the Student Record Screen in the DxR Record Utility.

Buttons to Review Student Records

Diagnostic Buttons

Click **Diagnosis** to see the student's final diagnosis and the correct diagnosis.

This screen will display both required components and non-required components. The Components (parts) of the correct diagnosis which are matched in the student's diagnosis are displayed in bold text. If the student fails to arrive at the correct diagnosis, his/her Diagnostic Performance Ranking will fall below "Lucky."

To override the computer evaluation, click the appropriate Satisfactory/Unsatisfactory button to change the computer's evaluation. The words "Instructor Override" will appear. This will automatically change the scoring for the individual student's record. (See Helpful Hint.)

Click **Hypothesis** to see a list of the diagnostic hypotheses the student considered and the correct diagnosis. Click Yes or No to indicate whether the student included the required items. This selection offers the instructor the opportunity to **override** the computer's evaluation (see Helpful Hint). Optional: You may click one of the four radio buttons to make a qualitative judgement (ranging from Thorough to Vague) about the student's hypothesis list. If you mark one of these qualitative ratings, it will be reported to the student in your printouts of his/her evaluation. However, to include it in the scoring process, you must click the Adjust Criteria button (to go to the Scoring Paradigm) and assign positive or negative point values for each of the qualitative descriptions. If you assigned point values to the Hypothesis List ratings on the Adjust Criteria screen, they will be applied to the Clinical Reasoning Score when you select a rating.

Click the appropriate button (**Consider, Justify, Competing, and Thorough**) to reveal the criteria items necessary to receive a satisfactory evaluation for that node. The items in bold were selected by the student. Note that all the items must be bold (selected by the student) to result in a satisfactory evaluation for that node.

Optional: You may make changes to the computer evaluation for these paradigm categories (nodes) by changing the criteria. (See instructions for the Adjust Criteria screen, pg. 37.) Any changes in criteria you previously made in D_XR Clinician online will automatically be reflected in the Record Utility.

HELPFUL HINT

If you want to give a student credit for a diagnosis or hypothesis despite a misspelling or alternate wording, you can override the computer's evaluation.

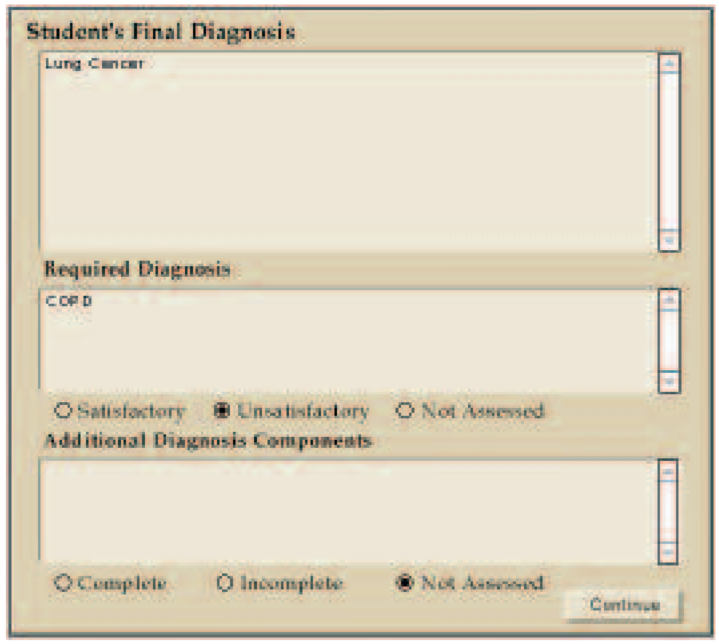


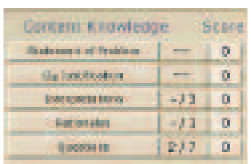
Fig. 24: Evaluating the student's final diagnosis.

Management Items Buttons

The Problem List button allows you to select a subjective rating for the user's problem list. You may then mark your selection as Satisfactory or Unsatisfactory. If you assigned points to the Problem List on the Adjust Criteria screen, they will be applied to the Management Score after you select a rating.

The other buttons (Required, Recommended, Related H&P, Related Lab) reveal the instructor's criteria for that part of the Management section. The items in bold were selected by the student. Note that all the items must be bold (selected by the student) to result in a satisfactory evaluation for that part of the Management section. You may enter your evaluation of the student's entries in the Required and Recommended categories, using the Satisfactory and Unsatisfactory buttons. In other categories, you may make changes to the computer evaluation by changing the criteria. (See information on the Adjust Criteria screen, pg.. 36-38.)

Content Knowledge Buttons



Statement of Problem: This button reveals the statement of the problem(s) as listed by the student. The statement of problems is not graded by the computer, so it will be designated as Not Assessed. You may wish to grade this information by clicking one of the radio buttons. If you entered point values for the various ratings (outstanding, acceptable, incomplete, and not acceptable), the points will be applied to the Content Knowledge score when you select a rating.

D$_X$ Justification: This button reveals the student's justification for the chosen diagnosis. You may wish to grade this information by clicking one of the radio buttons.

Interpretations: All interpretations the student made for items within the case can be viewed by clicking this button. These interpretations are not assessed by the computer but are available for your review and assessment. Click the words Not Assessed preceding each item once to assess that interpretation as satisfactory, or twice for an unsatisfactory assessment. If any of the items for interpretation are included in the case criteria, you will see a breakdown of which criteria items were interpreted by the student and which weren't.

Rationales: Click this button to see, review, and if you choose, assess the student's stated reasons for ordering certain items: lab tests, interview questions, exams, or management items. These Rationales are not assessed by the computer, but they are available for your review and assessment. Click the words Not Assessed preceding each item once to assess that rationale as satisfactory, or twice for an unsatisfactory assessment.

Questions: Answers to any questions that you included in the case can be viewed here. If the student's answer isn't assessed by the computer (example: short answer questions) or if you want to change the computer assessment, click the assessment description (Not Assessed, Correct, Incorrect) preceding each item until the desired assessment appears.

Student and Group Performance

This area of the student record screen displays basic information about the student's investigation and how it compares to the performance of the group or class as a whole.

The rows marked Questions Asked, Exams Performed, and Labs Ordered show the number of items the student requested in each category, the percent of the criteria items the student included in each category, and the class averages. Click the specific criteria button (e.g. Questions Asked) to see a complete list of the items the student requested for that section.

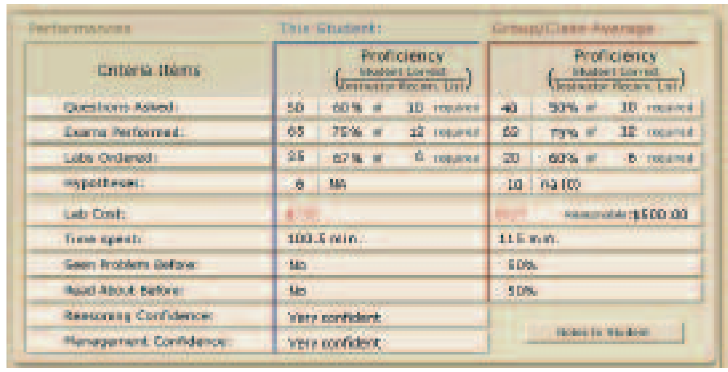


Fig. 25: Reviewing student and group performance.

The hypothesis row shows the number of hypotheses entered by the student as well as the class average. If you made a qualitative evaluation of the student's hypothesis list (thorough through vague), that evaluation will also be displayed.

- The screen also shows the relative cost of the labs ordered and the time spent in investigating the case.
- Data on whether the student has seen or read about a problem like this before are also shown, compared with percentages for the class.
- The student's confidence in his/her diagnosis and management are reported.

Notes to Student button: Click this button to open a screen for writing comments to the student.

Evaluation of Student Performance

Diagnostic Performance: This displays both a qualitative rating of the student's diagnostic performance and also the numeric value assigned to that rating. Click Adjust Criteria to see how Diagnostic Performance was determined using the Scoring Paradigm.

NOTE

To learn how to include your assessment of the student's hypothesis list in the Clinical Reasoning Score, see the Adjust Criteria section.

Clinical Reasoning Score (CRS): This is the computer's assessment based on how the student performed at the expected outcome, diagnosis considered, justify diagnosis, competing hypotheses, and thorough workup nodes. You also have the option of including the evaluation of the student's hypothesis list. The point values the student achieves for most nodes is based on the percentage of criteria items the student included for that node (except in the Expected Outcome and Diagnosis Considered node, where students are scored on an all-or-nothing basis.) For example, at the Justify node, where 20 of the 100 points have been assigned, a student who entered 50% of the "Justify" items would get 10 points.

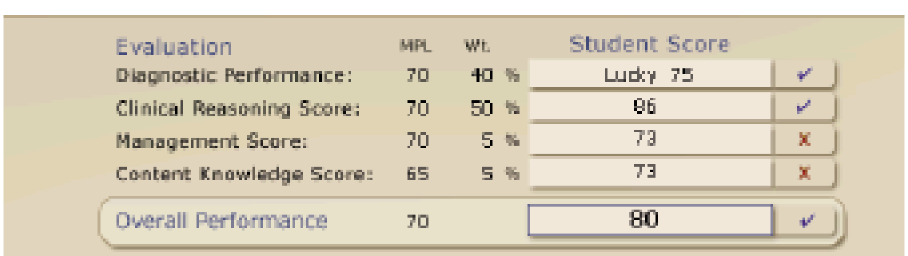


Fig. 26: The Evaluation of Student Performance section of the Student Record screen.

Management Score: The management score is based on the number of criteria items the student included in his/her management plan and the points assigned to the management section. You can also include your assessment of the student's Problem List in this score, or add the points assigned to the problem list assessment as a "bonus" added on to the Management Score. See the Adjust Criteria section for an explanation.

Content Knowledge Score: The Content Knowledge Score is based on your assessment of the student's performance on the following task: Statement of Problem, Dx Justification, Interpretations, Rationales, and Questions.

MPLs

In D_XR Clinician cases, there are four component scores that make up the Overall Performance score for the case..

For each score in a D_XR Clinician case, you can set a Minimum Pass Level.

This score represents the minimum score the student needs to be rated as satisfactory on that scoring component. You can change the Minimum Pass Level scores on the Adjust Evaluation Criteria screen.

Weights

The Weights assigned to the Diagnostic Performance, Clinical Reasoning, Management and Content Knowledge scores represent that score's importance in arriving at the Overall Performance Score. These values, expressed as a percentage, total 100%. They are set on the Adjust Criteria screen.

Overall Performance

The Overall Performance score is a numeric value derived from the Diagnostic Performance Score, the Clinical Reasoning Score, Content Knowledge, and the Management Score. When you weight each of the component scores, you determine each component's percentage of the Overall Performance score.

Collecting Statistical Data (Record Statistics Screen)

You may want to collect several types of statistical data that can be gleaned from the student records of a D_XR Clinician case. The Record Statistics screen provides detail on how the students in a group performed in the various evaluation nodes. The data from this screen can be useful in determining if a particular criteria item proved problematic for a large number or a small number of students. The screen will also display the number and percentage of students who were evaluated as "satisfactory" in that category or node. The "Statistics" buttons at the bottom of the screen allow you to see an overview and spreadsheets detailing group performance on each interview, exam, lab, and management item within a D_XR Clinician case.

- Click Record Statistics at the bottom of any screen in the Record Utility. The criteria categories are listed on the left.
- Click the category for which you want to review statistics (Consider, Justify, Competing and Thorough, or the Management categories of Required, Recommended, Related H & P or Related Lab). The screen will display all criteria items listed for that node/category and the number of students who included each item.
- Click a criteria item in the list to display the names of the students who did and did not request the item. Click Continue to return to the Record Statistics screen. (See Fig. 27.)
- Click Print in the lower right of the screen if you want to print information in these fields. To see a print preview, hold down the option (alt) key while clicking Print.
- Click Return to Last Record if you want to see the student record you last viewed.
- The Statistics buttons in the lower left of the Record Statistics screen provide you greater visual detail of student performance in the various categories and on specific items in a D_XR Clinician case.

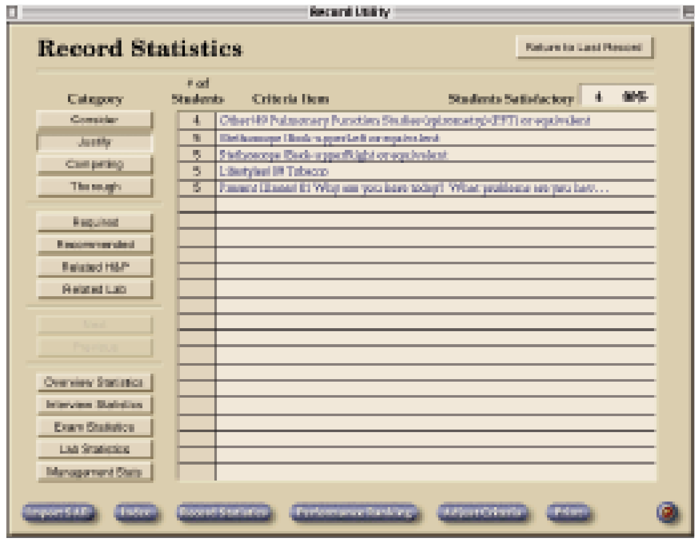


Fig. 27: The Record Statistics screen in the DxR Record Utility.

Overview Statistics

The Overview Statistics screen allows you to detect patterns in your students' clinical problem-solving processes, determine the most likely approach to the clinical problem, and identify students who may need additional instruction in a particular area.

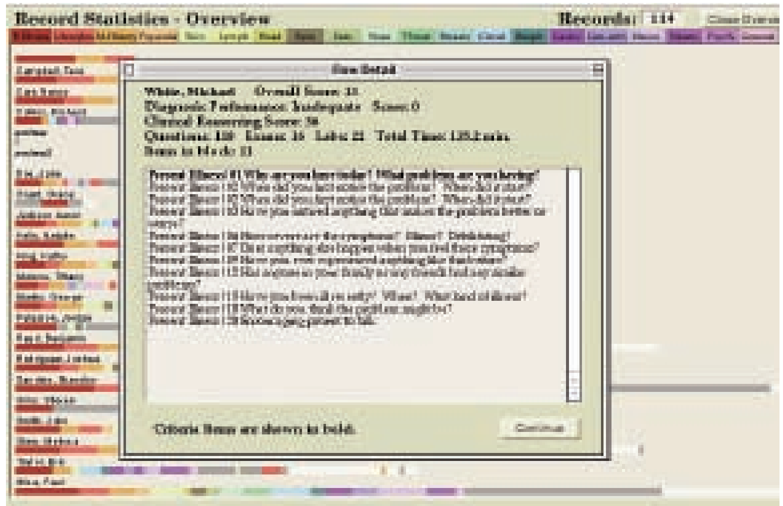
Click Overview Statistics to see a color-coded timeline of each student's actions as he/she worked through a D_XR Clinician case. At the top of the screen, the legend displays the colors representing each of the interview question categories, along with gray and white color bars representing the physical exams and laboratory tests, respectively. As you review the color bars corresponding to each student name, you will notice that the relative length of each colored section reflects the number of items the student included from that part of the program at that particular point in the investigation. For example, a short bright red bar indicates that the student asked very few questions about the patient's lifestyle, while a relatively long white bar would indicate that the student ordered many lab tests at that point in the clinical investigation. By comparing the color bars for the students in a group, you may be able detect patterns in your students' problem-solving processes. For example, if all or most students arrived at the correct diagnosis and followed a similar pattern in arriving at that diagnosis, you may determine this is the most likely approach to the clinical problem. However, if a student's problem-solving pattern appears atypical, you may determine there's a need for a closer review of the student's performance in selecting the criteria items and of the student's diagnostic and clinical performance.

NOTE

Depending on the number of students in your group and the speed of your computer, it may take several minutes for the Overview Statistics screen to appear.

The Overview Statistics screen can also provide detail on the specific items the student included in each step of his/her inquiry. Find a student whose record you would like to inspect more closely, and then click a section of the color-bar to display a list of the specific items the student included from that category (interview, exam, lab) at that particular point in the clinical investigation. A scoring summary and the total number of items the student selected in that part of the program will appear above the list. The items displayed in bold type were designated by the case author/instructor as criteria items. You will see a scoring summary for that student at the top of the window.

Fig. 28: Overview statistics.



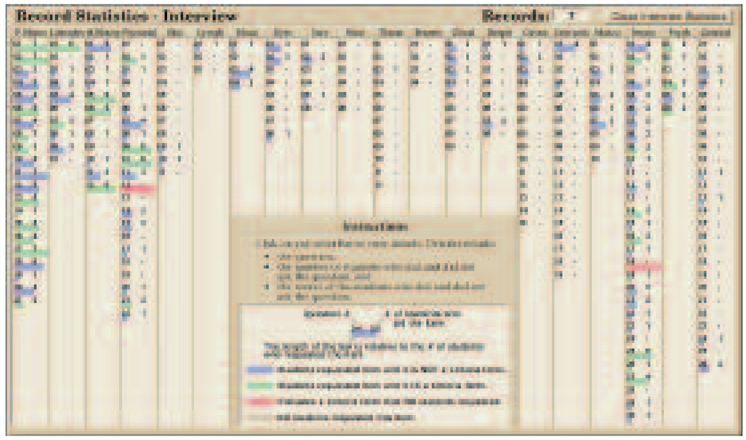
Because the Overview Statistics screen is a color-coded chronological display of each student's actions in a case, you can learn whether the student followed a logical problem-solving process. For example, if you notice that a particular student ordered lab tests (represented by white on the color bar) early in the clinical investigation and then ordered more labs later on, you can see detail of what labs the student ordered initially compared to the labs ordered later in the investigation. A review of the student's investigation leading up to each lab session may indicate whether the student was engaged in a focused inquiry or merely scanning in hopes of arriving at the correct diagnosis.

Interview, Exam, Lab, and Management Statistics

These statistics screens — accessed from the Record Statistics screen — allow you to explore in greater detail the questions, exams, lab tests, and management options the students in the group included and omitted from the clinical inquiry. Examination of this screen may alert you to specific areas in which the group needs additional instruction or it may help you identify individual students who are having difficulty. Click one of these buttons (Interview Statistics, Exam Statistics, Lab Statistics, or Management Statistics) to see a spreadsheet view of student performance in the selected part of the D$_X$R Clinician case. The spreadsheet view uses color bars to provide detail on how students performed on each item in the database. Above each color bar, the number on the left represents the D$_X$R Code for the item, while the number on the right is the number of students in the group who included that item in their investigation. Click any color bar to reveal the numbers and the names of the students in the group who did and did not include that item. Click Instructions to return to the color bar screen.

- A blue color bar corresponds to non-criteria items that at least some students in the group requested. Your examination of this detail may lead you to more closely inspect the students' individual records for an indication of whether the individual students were engaged in a reasonable inquiry rather than simply "scanning" the patient database.

Fig. 29: The Interview Statistics screen with detail of group performance.



- A green color bar represents a criteria item that at least some of the students in the group included. Examination of the numbers of students who did include the case criteria items versus the number of students who did not include the items may help you assess whether most students in the group were on the right track in including the key items in diagnosing and /or treating the patient.
- A red color bar alerts you to a criteria item that none of the students in the group included. This may point to an area in which students need additional instruction, or it may indicate a criteria item that is beyond the scope of the students' current educational level.
- A tan color bar represents non-criteria items that no students included.

The length of the color bars corresponds to the proportion of students in the group who included that item in their investigation. When you are finished reviewing this information, click Instructions to return to the Statistics screen.

Performance Ranking Screen

You can review the overall performance for the class in conjunction with the statistical information to gain insight into whether changes in the scoring paradigm are needed, and if so, how such changes would affect the students' performance.

- Click Performance Ranking at the bottom of any screen in the Record Utility to go to the Performance Ranking Screen. The Overview displays the number of students achieving each of the 10 Levels of Diagnostic Performance – Impressive to Inadequate – as well as the scores for the Management section and Content Knowledge. The first column of numbers (# – next to the performance ranking) represents the number of students in each performance category. The numbers under Lo, Av, and Hi are the lowest, average, and highest Clinical Reasoning Scores (CRS) recorded in that group.
- Click a Performance Level category or click Management or Content Knowledge to view detail of student performance in that particular category. Information exhibited for each student in that Performance level will include: the student name, Clinical Reasoning and Management Scores, Content Knowledge score, the number of Questions, Exams, Labs and total time recorded, and the diagnosis entered by the student. Choose a different category to hide the field.

Fig. 30: Accessing detail of Performance Level Scores through the Performance Ranking screen.

Click Print at the lower right of the Performance Ranking screen if you want to print the information shown in these fields. To see a print preview hold down the option (alt) key while clicking Print.

Printing

This function allows you print various types of reports on student performance. The Complete Student Records list will include the names of all students for whom you have records in the Record Utility. The Selected Records list will be empty until you add student names to the list. You can direct the Record Utility to print different data for students in each of these two lists.

Click Index to go to the Index screen. Click the Print pull-down menu to see your print options. Select the type of data you would like to print for each of the lists. To enter student names into the field marked Selected Records, click the student's name in the Record List field while holding down the Option (Alt) key. To remove a name, click the name in the Selected Records field.

On the Student Record Screen clicking Print and then selecting SAR screen in the menu produces a printed picture of the Student Record screen as you are seeing it.

HELPFUL HINT

On the Record Utility's Import screen you can also export student performance data to a data analysis program. In the SAR Files pull-down menu (top right of the screen) select Export to a tab-delimited file. This function allows you to export data in two files: a Key List file that contains a list of all the items in the D_XR databases that were applicable to your case; and a case data file that contains your student list and data on student performance. **To export data, you must use data analysis software that imports data in tab-delimited format.**

Fig. 31: Reports that can be printed from the Record Utility.

Common Information			
• Student Name/ID	• Performance Rating	• Case Name	
• Clinical Reasoning Score	• Management Score	• Computer Evaluation	
• Faculty notes to student (if any)		• Content Knowledge Score	
Basic Student			
• All common info	• Student DDx List	• Labs ordered	• Scoring Explanation
Complete Report			
• All common info	• Start/stop times	• Student notes	
• Chronological log of all student activity			
Items by Hypothesis Report			
• All common info	• Student hypothesis list and all items associated with it		
Items for Diagnosis			
• All common info	• Student Dx and all items associated with it		
List of Labs Ordered			
• All common info	• All student-ordered labs		
Content Knowledge Report			
• All common info	• Student Dx Justification	• Student Rationales	
Notes			
• All common info	• All student SOAP notes, general notes, and learning issues		
SAR Screen			
• Prints a picture of the student record screen			
Management Plan			
• Prints a list of the Management items that the student ordered			

Browser Requirements and System Requirements

Cookies and Javascript must be enabled. Your browser must also have Apple Inc.'s QuickTime 5.0.2 or greater plug-in installed. Make sure you select a full install of QuickTime. Also make sure your browser preferences are set to allow the page to specify the colors and fonts. The following browsers are compatible with this program. Using a browser and/or browser version other than one of the following may cause browser crashes and other unpredictable results when using this program.

- Microsoft® Internet Explorer version 6.0 or later
- Safari® version 3.1 or later
- Firefox® version 1.5 or higher

To run the Record Utility, you need a computer meeting the following requirements:
Windows® 2000; Windows® XP; Windows® Vista
Power Macintosh® G3, G4, or G5 running OS 10.1.5-10.4.1; Intel-based Mac 10.5

Screen Size and Monitor Resolution

D$_X$R Clinician requires a minimum monitor resolution of 1024x768 pixels. If your monitor is not set for 1024x768 pixels or higher resolution, portions of your screen may be cut off and a warning message will appear when you try to log in to the case.

Your monitor must also be set display at least 16 bit color (thousands of colors). If your monitor is not set to display 16 bit or higher color, images and movies may appear distorted, pixelated, or washed out on your screen.

Changing QuickTime Connection Settings

D$_X$R Clinician cases can include various media, including QuickTime™ movies. With slower dial-up Internet connections, you may experience a degradation in the viewing quality of the movies. By manually overriding the connection speed setting for QuickTime, it is possible to improve the viewing quality of the QuickTime™ movies. However, you should expect it to take substantially more time to download movies when set at a higher connection speed setting.

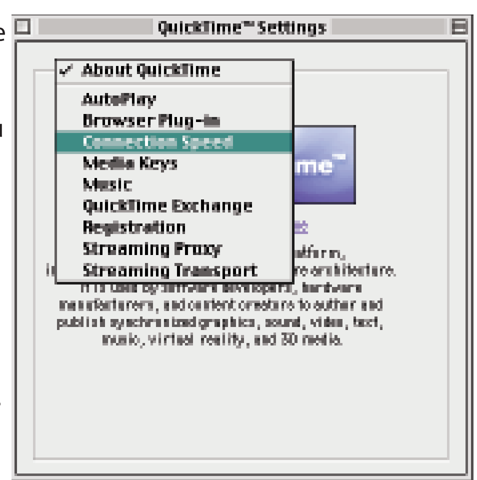


Fig. A1: Quicktime Settings window.

To manually override the Connection Speed settings in QuickTime™, follow these steps.

1. Open your computer's control panel.
2. Open the QuickTime™ settings (see Fig A1).
3. Use the pull-down menu at the top of the QuickTime™ settings window to select Connection Speed.
4. When the Connection Speed settings appear, select a connection that is faster than the one you are using to access the Internet. However, keep in mind, the faster the connection speed you select, the longer the download time for the QuickTime™ movies in the case.
5. Close the window.

Sound

Heart and breath sounds will sound best when heard through headphones.

Problems hearing sounds?

1. Make sure QuickTime is installed. When QuickTime is installed, you should see this controller when you select an item that has a sound as a result.

2. If you are using Windows® and see the controller shown below, Quicktime's ability to play embedded mp3 files has been disabled. You must enable it. For instructions, see below or use the Help button on the D$_X$R Clinician case screen.

Re-enabling QuickTime's mp3 Player in Windows

If QuickTime's ability to play mp3's has been disabled in Windows®, the following directions will help you restore it.

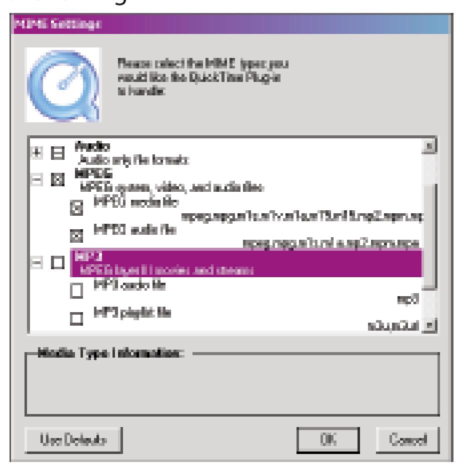


Fig. A2: MIME settings with QuickTime .mp3 settings disabled.

1. Locate the Start Menu icon in the menu bar across the bottom of your screen.
2. Click the Start Menu icon to open it.
3. Select the Settings menu item, and open it.
4. Click the Control Panel menu item. A Control Panel window should appear on your screen.
5. Locate and open the QuickTime control panel. A QuickTime Settings window should appear on your screen.
6. On the QuickTime Settings window, click the menu and select Browser Plug-in. A set of Browser Plug-in choices will appear in the window.
7. Click the MIME Settings button at the bottom of the QuickTime Settings window. The MIME Settings window will open.
8. Scroll to the bottom of the list. You should find two entries for mp3s.

   Both entries should have a "+" beside them. If they don't, double click on them to produce the "+". Once the "+" appears they are enabled.
9. QuickTime has now been re-enabled to play mp3s. Click OK to close the window.

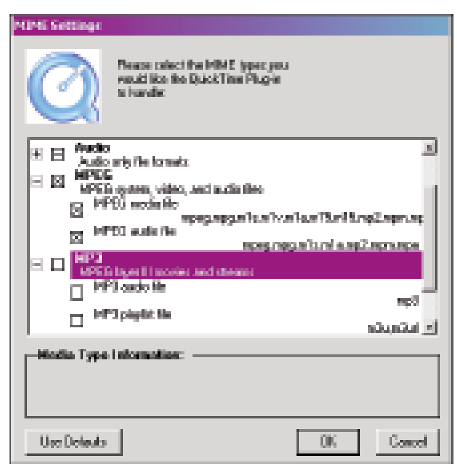


Fig. A3: MIME settings with QuickTime .mp3 settings enabled.

Acceptable File Types

Instructors may want to attach their own media files to a case or cases. These files must first be uploaded to a server. File types that are acceptable for upload include:

.gif	.jpg	.mov	.mp3	.png

Graphics:

Formats: *.jpg (.jpeg), .gif, .mov, .png*
File Size|KB: *less than 100KB (kilobytes)*
File Resolution: *72 ppi (pixels per inch)*
File Dimensions:
Lab section: *564 pixels (w) by 320 pixels (h)*
Exam section: *564 pixels (w) by 320 pixels (h)*
Interview section: *not recommended*

Audio files:

Format: *.mp3*
File Size: *less than 100 KB*

Uploading Your Media Files

Uploading and Adding Media Files

Open the Management Utility, select a directory and the case that you want to edit, and then enter the Edit Case Data function. Navigate to the portion of the case and to the specific item to which you want to add a media file. Scroll down to the Media section of the edit screen.

To upload a media file from your computer to the server:

1. Click Add New Media.
2. Make sure your media file meets the specifications listed above.
3. Click Browse and then navigate to the file that you wish to upload.
4. Click Upload File.

Once the file is uploaded, it will appear in the Available Media List.

Note: Once a file is successfully uploaded, it can't be removed by anyone but your system administrator.

To add a media file once it's been added to the Available Media List:

1. From the Edit screen, click Available Media List.
2. Select the media file that you want to add to this item. If you aren't sure if you've selected the correct item, click Preview Media.
3. When you have selected the media file that you wish to insert, click Add.
4. Close the window and return to the Edit screen.
5. Click Save Changes.

Index