

# **User Pre-Release Notes**

for RADNET rRIS  
Build 1.05

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## **1. Purpose**

This document describes some of the new features and changes implemented in rRIS as of the end of Sprint 5. This pre-release version of rRIS is referred to as Build 1.05.

Only features which can be visually demonstrated to the user will be outlined in this document.

## **2. Intended Audience**

This document is created by the rRIS Development team for the RadNet RIS management team.

## **3. Installing/Accessing the Application**

The client installer for rRIS is still in the early development stages. For now, users can access the system by remoting to the rRIS test server in Baltimore as follows:

1. Start Remote Desktop Connection and specify IP 10.120.0.152
2. Username: Radnet domain account
3. Password: Radnet domain password
4. Double click the rRIS icon on the desktop or go to Start→All Programs→rRIS
5. Login User: terry
6. Login Password: ris

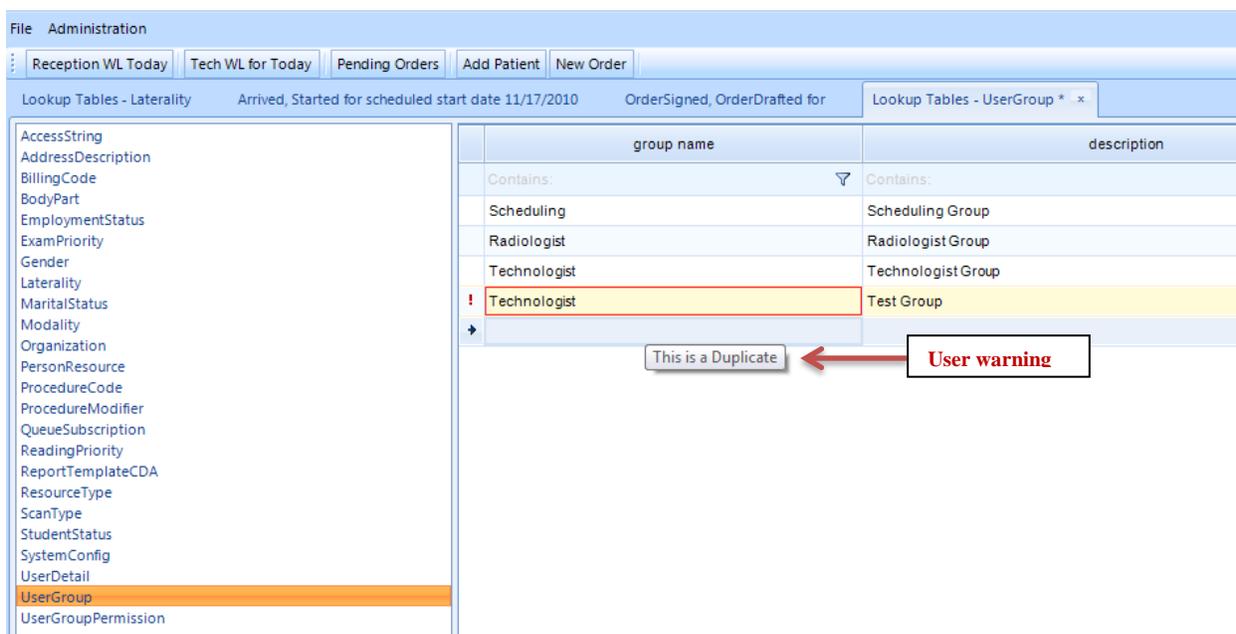
If you experience difficulties accessing the application, please do not hesitate to contact Spencer MacDougall with the PEI RIS Development Team.

## 4. New Features and Enhancements

### Enhancements to Lookup Table Editor

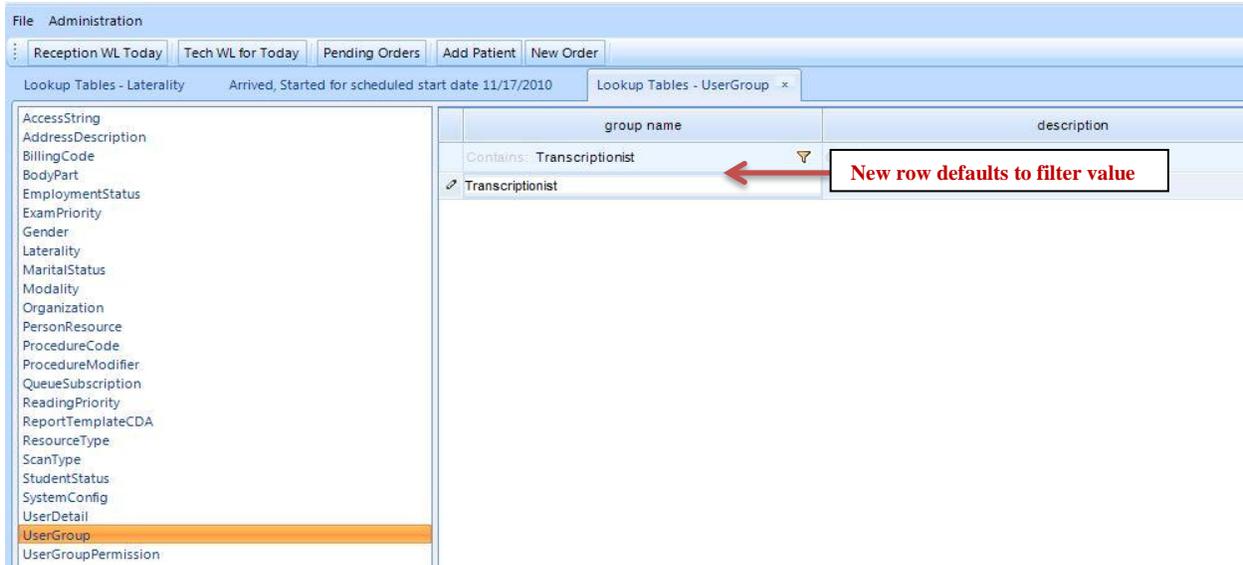
The Lookup Table Editor has been expanded in Sprint 5 to account for the following improvements. Please note that these changes have been implemented in the UserGroup lookup table only for Sprint 5. Remaining tables will follow suit in future builds.

1. Validate the data so the user cannot save invalid data such as a duplicate name. The error is shown in the status bar and the user simply clicks on it and is taken to the row with the failed validation.



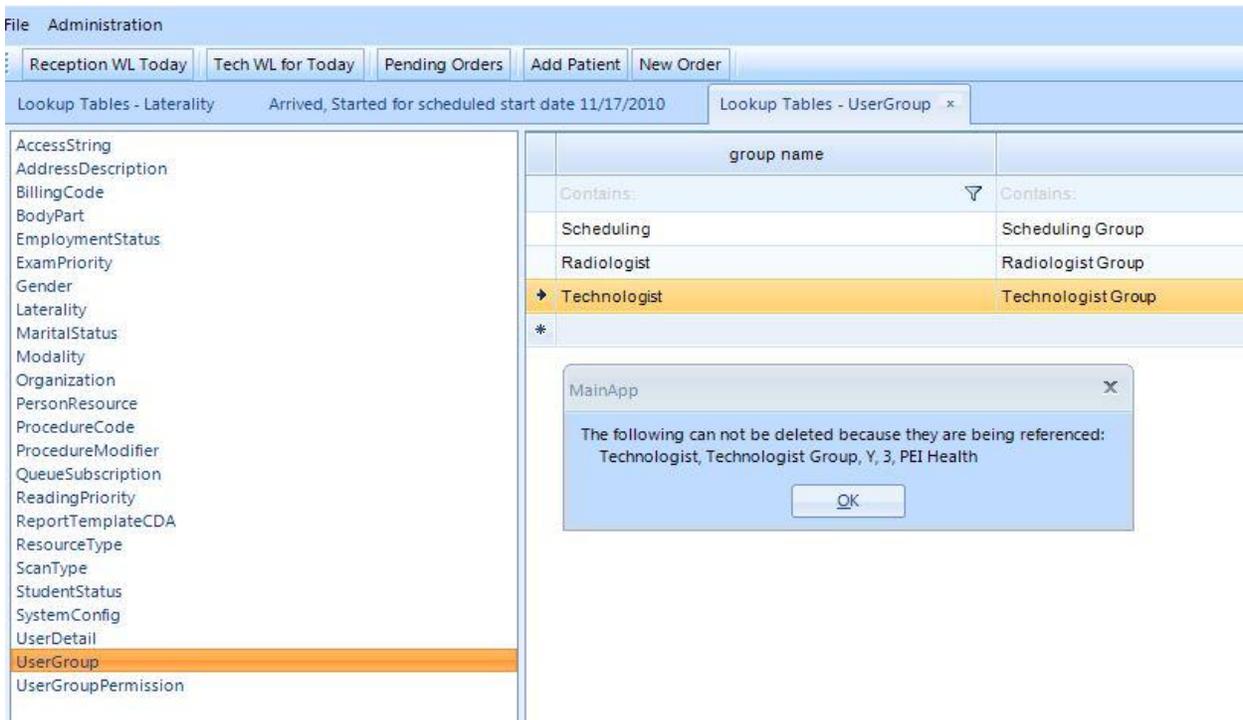
**Figure 4.1 – UserGroup Lookup Showing Duplicate Name Warning**

2. Default values have been applied to new rows so a field like Active can automatically be set to “Y” by default, saving the user from having to set it manually for every new row.
3. User is prompted when trying to save any rows with missing required fields.
4. When a user clicks on a new row by mistake, the system will not prompt the user to save changes if no changes have been made to the new row.
5. If a user attempts to filter the lookup and add a new row, the default value is based on the filter criteria.



**Figure 4.2 – UserGroup Lookup Showing New Row Based on Filter Criteria**

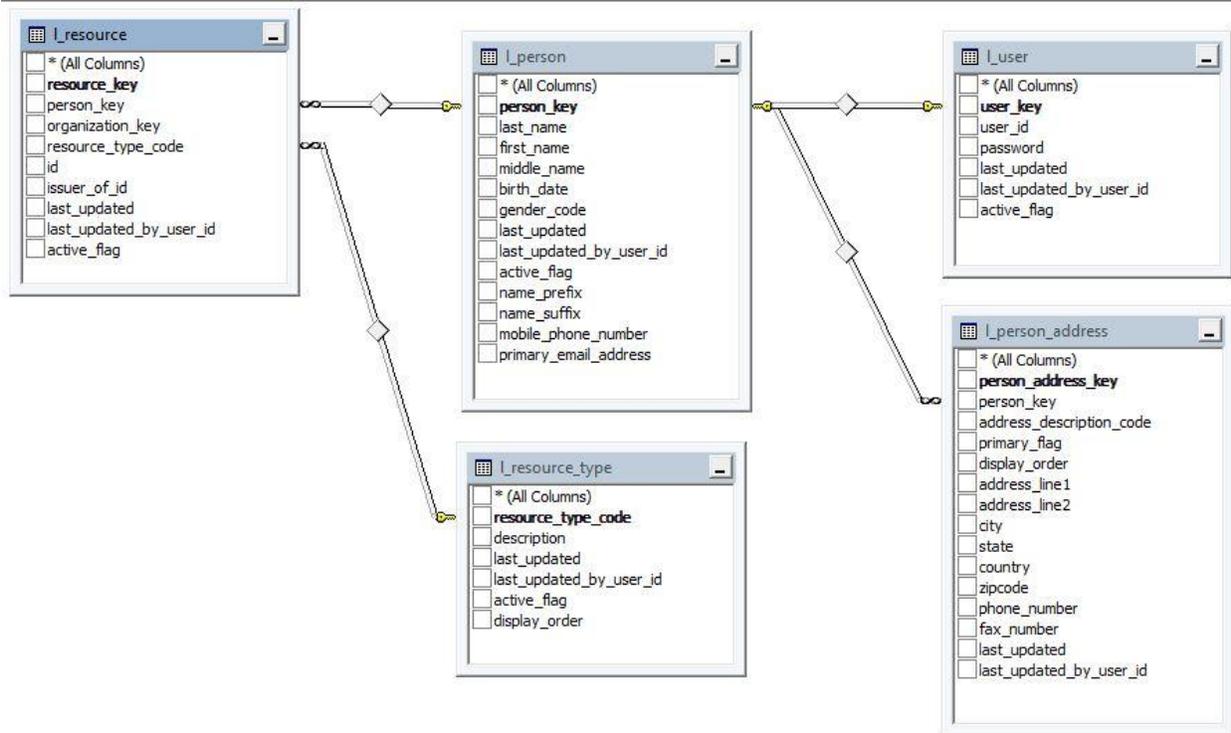
6. User is prevented and displayed a message when trying to delete a lookup table row with entries that are referenced in the database.



**Figure 4.3 – UserGroup Lookup Showing Referenced Row Message**

## User Manager

The UserDetail screen in rRIS is where the system administrator will add, modify, or mark users as inactive. In the rRIS data model there are Persons, Resources, and Users. A Person can be a User, Resource, or both. Examples of Resources are technologists, transcriptionists, or referring physicians. The UserDetail screen is limited to Users only and does not include Resources unless the Person is both a User and a Resource.



**Figure 4.4 – User Data Model**

Adding a new user can be accomplished by simply clicking the “New User” button on the UserDetail screen. The application will prompt the user to first search for the new user to see if he or she already exists in the system as a Person/Resource. For example when adding “Jim Smith” as a new user, the search will return Jim Smith as he is already set up as a referring doctor. Simply clicking “Add User” will populate the user screen with Jim Smith’s information. Once required fields like User Name, User Group, and Password are completed Jim Smith is saved as a user and may begin using the application. The system can be configured to validate a user against Windows Active Directory or utilize the username and password stored in the rRIS database.

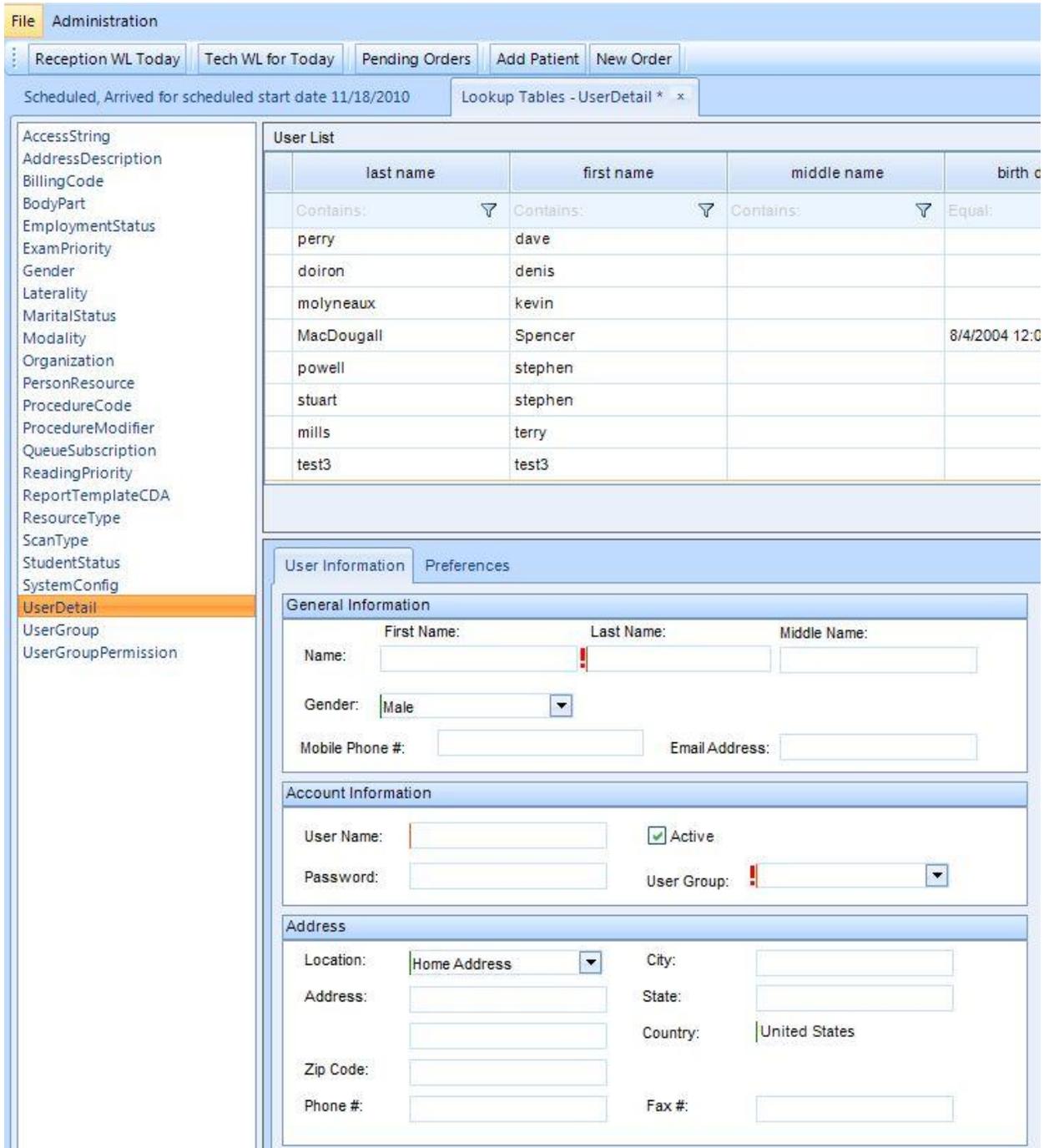
The screenshot shows a window titled "Create New User". At the top, there is a section "Search for and Create Person" with input fields for "First Name" (containing "Jim"), "Last Name" (containing "Smith"), and "Middle Name". Below these is a "Gender" dropdown menu. There are "New Person" and "Cancel" buttons. Below this is a "Person List" table with columns: last name, first name, middle name, birth date, gender code, active flag, name prefix, name suffix, mobile phon..., and primary email... The table contains one entry: Smith, Jim, M, Y, MD. At the bottom are "Add User" and "Cancel" buttons.

**Figure 4.5 – New User Person Search**

The screenshot shows a "Lookup Tables - UserDetail" window. On the left is a list of lookup tables, with "UserDetail" selected. The main area is titled "User List" and contains a table with columns: last name, first name, middle name, and birth da. The table lists several users, including perry dave, doiron denis, molyneaux kevin, MacDougall Spencer (with birth date 8/4/2004 12:00), powell stephen, stuart stephen, mills terry, and test3 test3. Below the table are tabs for "User Information" and "Preferences". The "User Information" tab is active and contains sections for "General Information" (with name fields for Jim Smith and gender set to Male), "Account Information" (with user name, password, and user group), and "Address" (with location set to Home Address, city, state, zip code, phone, and fax fields).

**Figure 4.6 – New User Details if Person Already Exists**

If the Person Search does not return the person that needs to be setup as a user, simply clicking “New Person” will allow the setup of a new person and user details simultaneously.



**Figure 4.7 – New User Details if Person Does Not Exist**

## User Groups and User Group Permissions

User Groups have been introduced in this release. Currently, a user can only belong to one user group set in the UserDetail screen. In a future release, this will be expanded so a user may belong to one or more user groups.

Permission overrides can be set at the User Group level using the UserGroupPermission lookup table. For example, if technologists are not permitted to create or edit orders then the appropriate access string codes can be set to “None” to hide the order functionality.

The screenshot shows a window titled "Lookup Tables - UserGroup". On the left is a list of lookup tables, with "UserGroup" selected. The main area displays a table with two columns: "group name" and "description".

group name	description
Contains:	Contains:
→ Scheduling	Scheduling Group
Radiologist	Radiologist Group
Technologist	Technologist Group
Referring	Referring Group
*	

**Figure 4.8 – UserGroup Lookup Table**

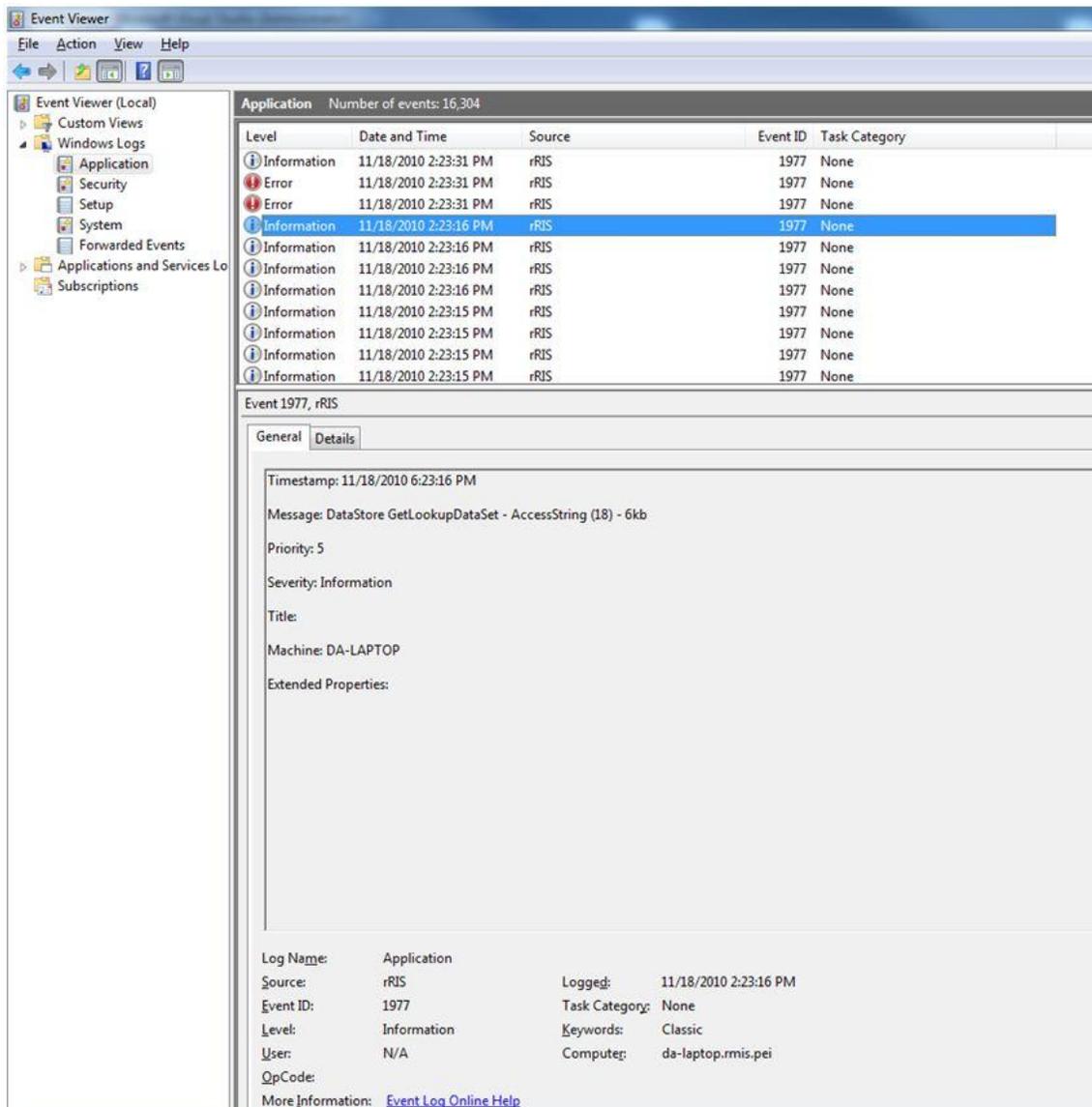
The screenshot shows a window titled "Lookup Tables - UserGroupPermission". On the left is a list of lookup tables, with "UserGroupPermission" selected. The main area displays a table with three columns: "Group Name", "access string code", and an empty column. The table is filtered to show only "Technologist" groups.

Group Name	access string code	
Contains:	Contains:	Contains:
→ Technologist	Clinical.NewOrder	None
Technologist	Clinical.EditOrder	None
*		

**Figure 4.9 – UserGroupPermission Lookup Table**

## Logging Framework

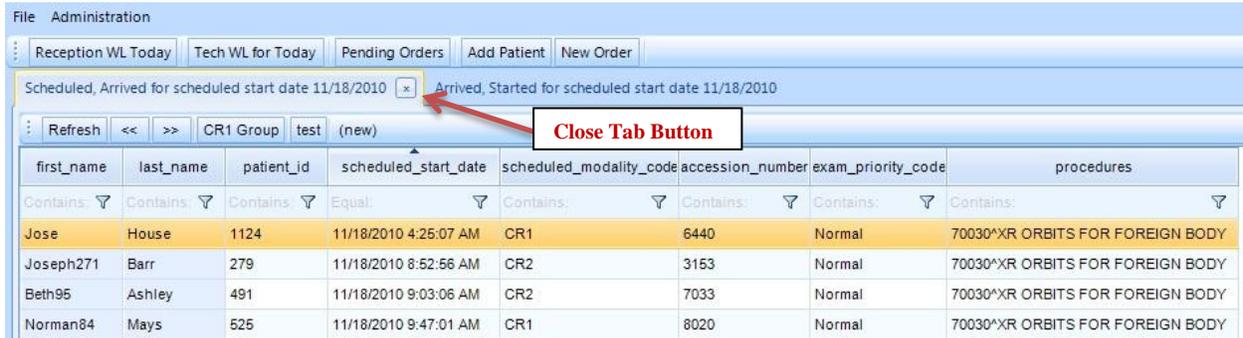
rRIS requires a logging framework to help administrators and the development team to troubleshoot the application. The client and the server will both utilize the logging framework to persist logging messages to the Windows Event Viewer. The development team have been coding the application with logging in mind to properly capture critical errors, warnings, relevant information, etc. Through configuration settings, logging can be disabled, the logging level can be set, or the destination of the log files (flat file, xml file, event viewer, database, etc.) can be set.



**Figure 4.10 – Event Viewer Showing rRIS Logging Information**

**Close Tab Button**

Tabs now have a close button which will only show on the active tab or when the user hovers the mouse pointer over the tab. The tab is closed when the “x” button is pressed.



**Figure 4.11 – Close Tab Button on Scheduled Worklist**

**Procedure Picker**

rRIS requires the ability to pick several procedure codes when placing an order or scheduling and for each procedure code to specify a laterality and/or body part. Some procedures will require the user to specify a laterality or body part as defined in the lookup table Procedure Codes. Also, some procedures will have a default laterality and or body part as described in the Procedure Codes table.

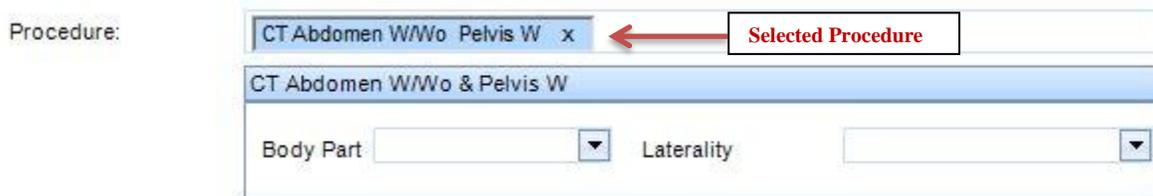


**Figure 4.12 – ProcedureCode Lookup with Body Part and Laterality Required**

The control “MultiTypeAhead” was used in the orders screen such that the user can add procedures by typing in the name of the procedure. As the user types the possible matches are presented and can be selected from a dropdown. Selection can be made by:

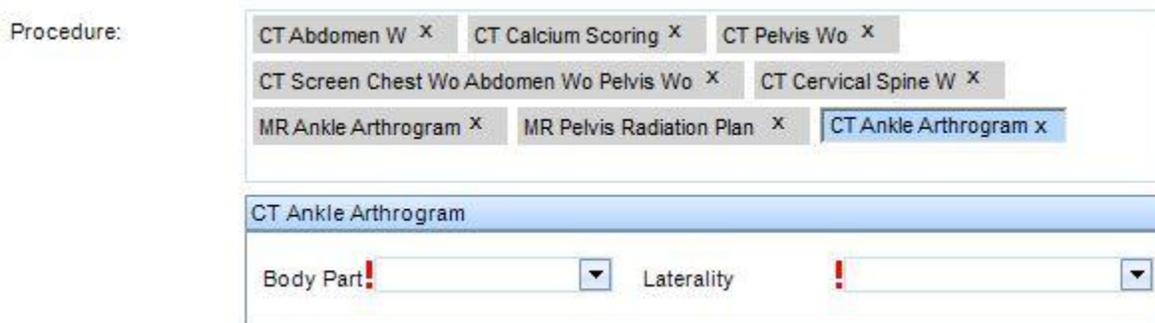
- Tabbing away from the control
- Selecting the enter key
- Selecting the space bar
- Selecting the comma key

If the user has a selection made, it will appear in a square area with an ‘x’ on the end. Clicking on the ‘x’ at the end or pressing the “backspace” key will delete the existing procedure codes.



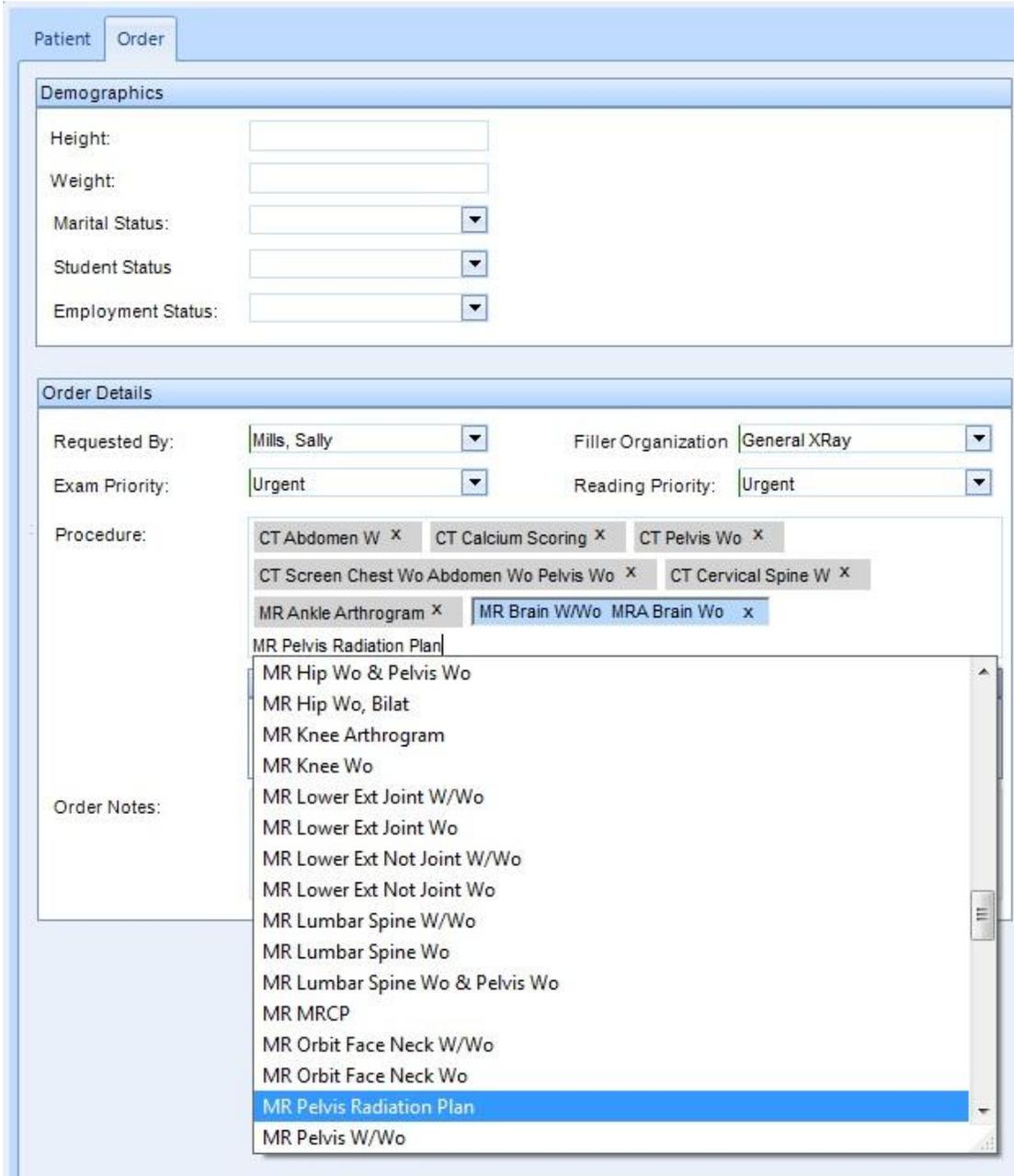
**Figure 4.13 – Procedure Picker with CT Abdomen Selected**

The user can also use the arrow keys to change the selected procedure code. When the selected procedure is changed the area below will show the laterality and body parts selected for that procedure and if any validation errors exist they will display and the user will be unable to move to another procedure till those validation errors are resolved. If there are any defaults specified for body part and laterality per procedure code, they will automatically display when that procedure code is selected.



**Figure 4.14 – Procedure Picker with Body Part and Laterality Required**

As the user adds additional values to the procedure code area the text entry box will grow and move other items on the screen down as needed.



**Figure 4.15 – Procedure Picker with Multiple Procedures Selected**

## Auditing Framework

An auditing framework has been developed to log all server retrievals and updates of patient, order, and study related data. A GUI screen is available for the user to view the audit log. This is accessible by right-clicking a worklist row and selecting “Audit History” (assuming the user has the necessary permissions).

User has the ability to view an audit trail based on patient, order, and study levels. In the details section of the audit history viewer there is a description showing what fields or statuses were changed by the user.

Show entries for:

Patient
  Order
  Study
  Everything for this patient

	description	notes	date	user id	retrieval	accession number	order number	status
	Contains: ▾	Contains: ▾	Equal: ▾	Contains: ▾	Contains: ▾	Contains: ▾	Contains: ▾	Contains: ▾
▶	Patient Updated	Patient updated	11/18/2010 4:37:51 PM	RMIS\spencer	N			
	Patient Retrieved		11/18/2010 4:37:41 PM	RMIS\spencer	Y			
	UI_OrderSubmitted	Visit updated	11/18/2010 4:35:42 PM	RMIS\spencer	N			
	Order Retrieved		11/18/2010 4:35:35 PM	RMIS\spencer	Y		4121	Signed1
	UI_OrderSubmitted	Patient updated	11/18/2010 4:35:24 PM	RMIS\spencer	N			
	UI_OrderSubmitted	Order updated	11/18/2010 4:35:24 PM	RMIS\spencer	N		4121	Signed1
	Order Retrieved		11/18/2010 4:35:16 PM	RMIS\spencer	Y		4121	OrderSigned

```

<Changes>
<ModifiedRows>
  <c_patient>
    <primary_address_line1 />
  </c_patient>
</ModifiedRows>
</Changes>
    
```

**Figure 4.16 – Audit Trail showing update to Patient Address**

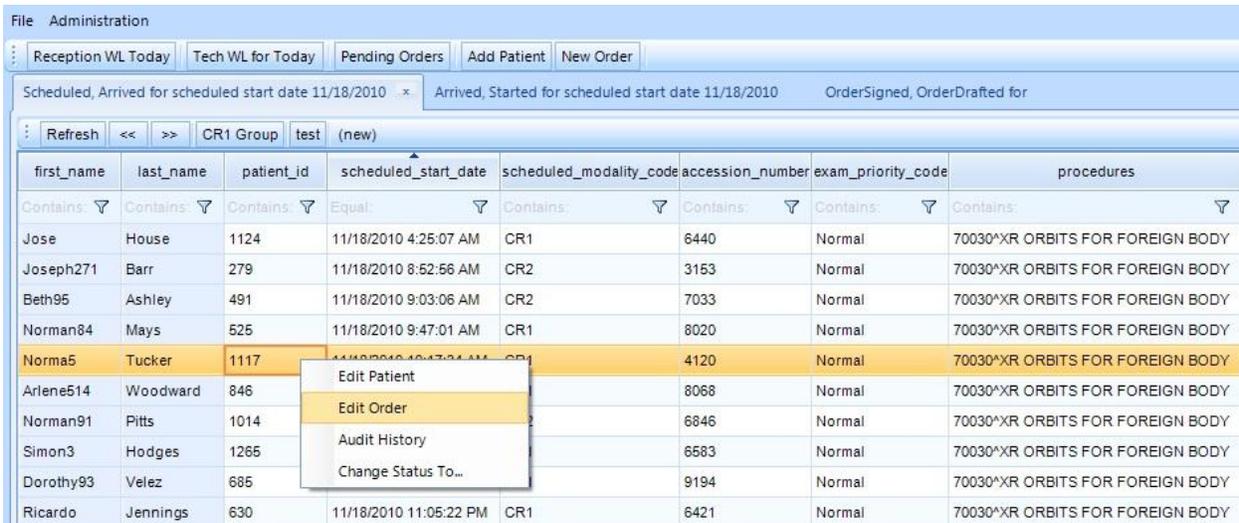
## Password Encryption

Various password encryptions methods such as Triple DES, AES, SHA-1, SHA-2, and MD5 were researched during Sprint 5. SHA-1 and SHA-2 are secure hash algorithms required by law for use in certain U.S. Government applications. Recently, it has been identified that federal agencies should not use SHA-1 and should be upgraded to SHA-2.

SHA-2 has not been identified as having the same mathematical weakness as SHA-1 and therefore has been utilized in rRIS.

## Worklist Context Menus

The rRIS worklist now has a right-click context menu feature which is configurable (through code) and fully supports user permissions.



The screenshot shows the 'Administration' window of the rRIS system. At the top, there are tabs for 'Reception WL Today', 'Tech WL for Today', 'Pending Orders', 'Add Patient', and 'New Order'. Below these are status indicators for 'Scheduled, Arrived for scheduled start date 11/18/2010', 'Arrived, Started for scheduled start date 11/18/2010', and 'OrderSigned, OrderDrafted for'. A toolbar contains 'Refresh', navigation arrows, and a filter 'CR1 Group test (new)'. The main area is a table with columns: first\_name, last\_name, patient\_id, scheduled\_start\_date, scheduled\_modality\_code, accession\_number, exam\_priority\_code, and procedures. A context menu is open over the row for Norma5 Tucker, showing options: Edit Patient, Edit Order, Audit History, and Change Status To...

first_name	last_name	patient_id	scheduled_start_date	scheduled_modality_code	accession_number	exam_priority_code	procedures
Jose	House	1124	11/18/2010 4:25:07 AM	CR1	6440	Normal	70030*XR ORBITS FOR FOREIGN BODY
Joseph271	Barr	279	11/18/2010 8:52:56 AM	CR2	3153	Normal	70030*XR ORBITS FOR FOREIGN BODY
Beth95	Ashley	491	11/18/2010 9:03:06 AM	CR2	7033	Normal	70030*XR ORBITS FOR FOREIGN BODY
Norman84	Mays	525	11/18/2010 9:47:01 AM	CR1	8020	Normal	70030*XR ORBITS FOR FOREIGN BODY
Norma5	Tucker	1117	11/18/2010 10:47:34 AM	CR1	4120	Normal	70030*XR ORBITS FOR FOREIGN BODY
Arlene514	Woodward	846	11/18/2010 10:52:01 AM	CR1	8068	Normal	70030*XR ORBITS FOR FOREIGN BODY
Norman91	Pitts	1014	11/18/2010 11:05:22 PM	CR1	6846	Normal	70030*XR ORBITS FOR FOREIGN BODY
Simon3	Hodges	1265	11/18/2010 11:05:22 PM	CR1	6583	Normal	70030*XR ORBITS FOR FOREIGN BODY
Dorothy93	Velez	685	11/18/2010 11:05:22 PM	CR1	9194	Normal	70030*XR ORBITS FOR FOREIGN BODY
Ricardo	Jennings	630	11/18/2010 11:05:22 PM	CR1	6421	Normal	70030*XR ORBITS FOR FOREIGN BODY

**Figure 4.17 – Reception Worklist showing Context Menu**

## Worklist Views

Worklist Views are buttons that reside at the top of a worklist and provide a convenient way of reusing saved filters. Here are some key features that have been implemented with rRIS worklist views:

- System has the ability to classify worklist views as:
  - Core Views – These are system views that will be released with and coded into the application.
  - Group Views – These are views that can be shared amongst a user group such as a group of schedulers or technologists.
  - Personal Views – These views are saved per user and may only be viewed by the user that owns them.
- Views are saved to the database and will be retrieved when the user logs on, therefore following the user no matter where he or she accesses the application.
- A different set of views can be maintained per worklist as they are based on worklist name.
- Views can be deleted by right-clicking the name of the view.

## RADNET, Inc. – rRIS Pre-Release Notes

This robust feature is still in the early stages of development. In future release, enhancements like permissions on creating views, renaming views, and better visual indicators will be introduced.

Accessing worklist views is as simple as clicking them on the worklist button bar. The example below illustrates a personal view called “Sorted by Name” where the patient’s last name and first name are sorted ascending and saved as a view.

last_name	first_name	scheduled_start_date	patient_id	scheduled_modality_code	accession_number	exam_priority_code	procedures
Alvarado	Jodie95	11/21/2010 7:19:15 PM	1002	CR2	221	Normal	70030*XR ORBITS FOR FOREIGN BODY
Burch	Trina307	11/21/2010 12:33:07 AM	973	CR1	5844	Normal	70030*XR ORBITS FOR FOREIGN BODY
Carson	Gordon	11/21/2010 3:28:19 PM	271	CR2	6637	Normal	70030*XR ORBITS FOR FOREIGN BODY
Conway	Andrea89	11/21/2010 1:39:21 PM	1018	CR1	2692	Normal	70030*XR ORBITS FOR FOREIGN BODY
Daniel	Dora	11/21/2010 4:11:11 PM	1216	CR2	7374	Normal	70030*XR ORBITS FOR FOREIGN BODY
Dougherty	Lora2	11/21/2010 12:54:18 PM	1046	CR1	3273	Normal	70030*XR ORBITS FOR FOREIGN BODY
Figuroa	Jean7	11/21/2010 9:25:12 AM	808	CR1	3979	Normal	70030*XR ORBITS FOR FOREIGN BODY
Gallagher	Roxanne25	11/21/2010 3:39:04 PM	1028	CR2	9470	Normal	70030*XR ORBITS FOR FOREIGN BODY
Galloway	Kenneth471	11/21/2010 6:42:34 PM	632	CR1	697	Normal	70030*XR ORBITS FOR FOREIGN BODY
Hull	Dina917	11/21/2010 11:46:41 PM	441	CR2	5050	Normal	70030*XR ORBITS FOR FOREIGN BODY
Krause	Marlene043	11/21/2010 7:04:20 PM	467	CR1	1374	Normal	70030*XR ORBITS FOR FOREIGN BODY
Molyneaux	Kevin	11/21/2010 12:56:06 AM	453	CR1	5722	Normal	70030*XR ORBITS FOR FOREIGN BODY
Norman	Jess387	11/21/2010 8:33:39 AM	368	CR1	9234	Normal	70030*XR ORBITS FOR FOREIGN BODY
Peck	Dantuuu12	11/21/2010 8:39:02 AM	344	CR1	8707	Normal	70030*XR ORBITS FOR FOREIGN BODY
Petersen	Blake6	11/21/2010 7:08:48 PM	819	CR2	6198	Normal	70030*XR ORBITS FOR FOREIGN BODY
Terry	Darla	11/21/2010 8:23:49 AM	1231	CR2	6950	Normal	70030*XR ORBITS FOR FOREIGN BODY
Walter	Marco26	11/21/2010 6:40:52 PM	743	CR1	4335	Normal	70030*XR ORBITS FOR FOREIGN BODY
Wilkins	Jody	11/21/2010 11:06:41 PM	399	CR1	3242	Normal	70030*XR ORBITS FOR FOREIGN BODY

**Figure 4.18 – Reception Worklist showing Worklist Views**

To create a worklist view, the user should first filter the worklist to meet his or her needs and then select the “(new)” button. The user is then prompted to provide a name for the view and specify if it is a personal or group view.

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For example, a user that belongs to the Scheduling group filters the reception worklist based on a specified modality type and decides to save this view and share it with other schedulers. In this case the group worklist view is called “CR2”. Once the view is saved, it will become accessible by other users belonging to the Scheduling group.

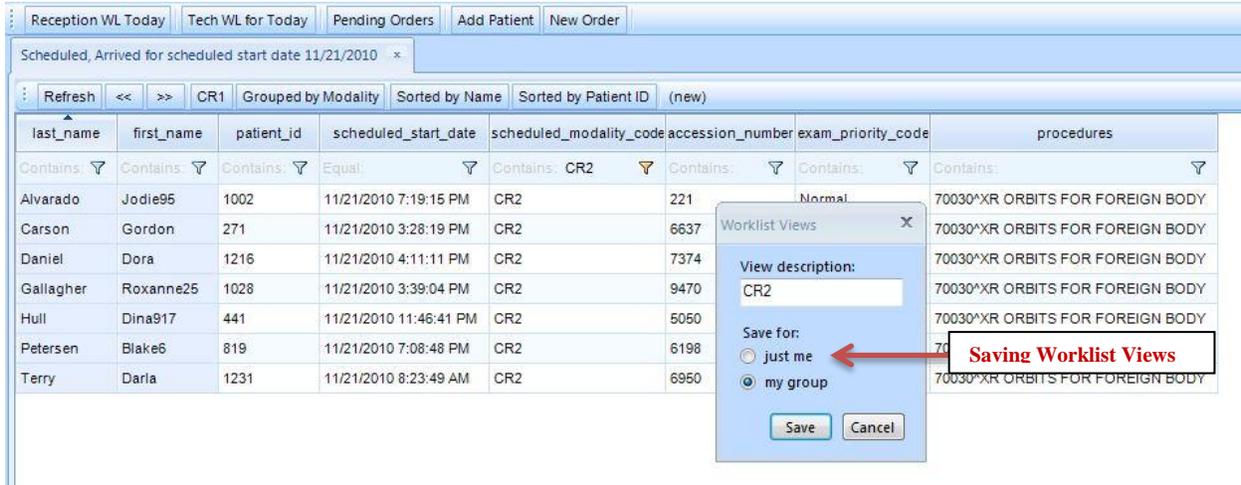


Figure 4.18 – Creating a Worklist Group View

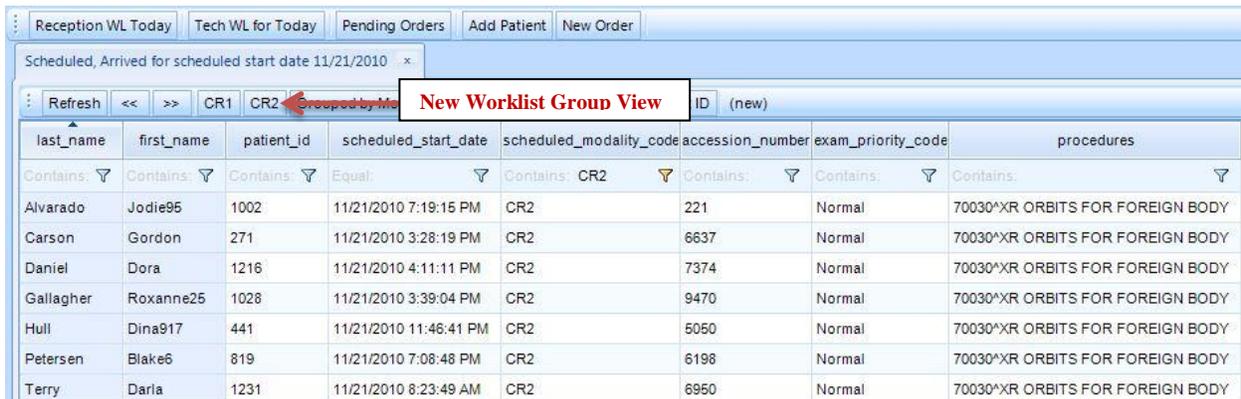
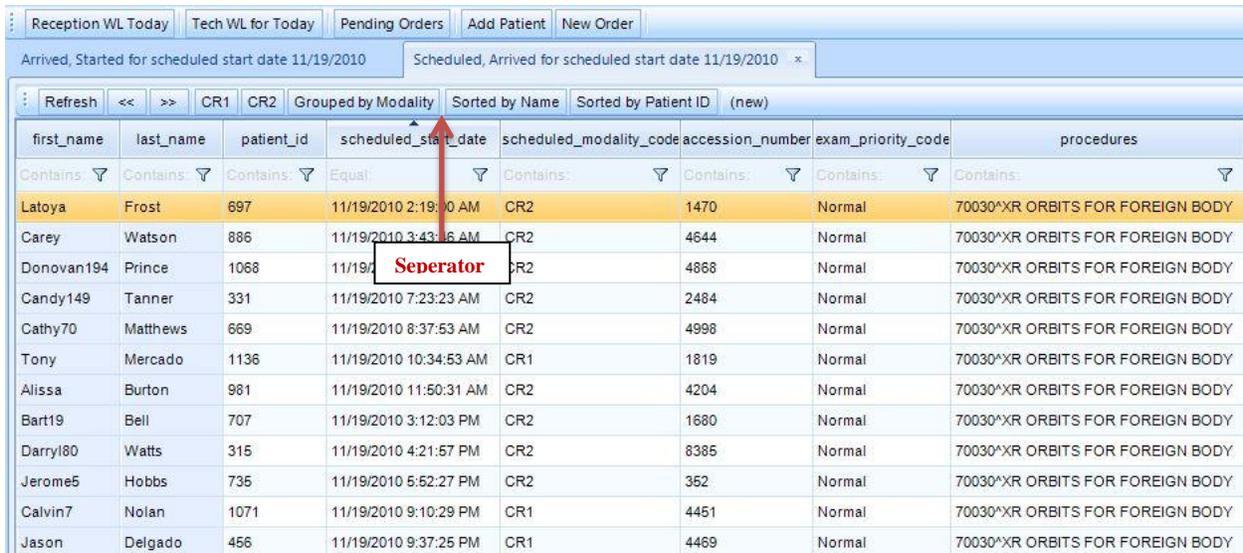


Figure 4.19 – New Worklist Group View Displaying on Button Bar

## RADNET, Inc. – rRIS Pre-Release Notes

If the user does not want the worklist view to be accessed by other user than he or she can simply select the “just me” radio button when saving the view. Group views and personal view will both exist on the worklist and are distinguished by a separator.



The screenshot shows a software interface for a medical worklist. At the top, there are tabs for 'Reception WL Today', 'Tech WL for Today', 'Pending Orders', 'Add Patient', and 'New Order'. Below these are two window titles: 'Arrived, Started for scheduled start date 11/19/2010' and 'Scheduled, Arrived for scheduled start date 11/19/2010'. The main interface includes a toolbar with 'Refresh', navigation arrows, and view options: 'CR1', 'CR2', 'Grouped by Modality', 'Sorted by Name', and 'Sorted by Patient ID (new)'. A table below displays patient appointment data. A red arrow points to a red-bordered box containing the word 'Separator' in the 'scheduled\_start\_date' column of the row for 'Donovan194 Prince'.

first_name	last_name	patient_id	scheduled_start_date	scheduled_modality_code	accession_number	exam_priority_code	procedures
Latoya	Frost	697	11/19/2010 2:19:00 AM	CR2	1470	Normal	70030*XR ORBITS FOR FOREIGN BODY
Carey	Watson	886	11/19/2010 3:43:16 AM	CR2	4644	Normal	70030*XR ORBITS FOR FOREIGN BODY
Donovan194	Prince	1068	11/19/2010 <b>Separator</b>	CR2	4868	Normal	70030*XR ORBITS FOR FOREIGN BODY
Candy149	Tanner	331	11/19/2010 7:23:23 AM	CR2	2484	Normal	70030*XR ORBITS FOR FOREIGN BODY
Cathy70	Matthews	669	11/19/2010 8:37:53 AM	CR2	4998	Normal	70030*XR ORBITS FOR FOREIGN BODY
Tony	Mercado	1136	11/19/2010 10:34:53 AM	CR1	1819	Normal	70030*XR ORBITS FOR FOREIGN BODY
Alissa	Burton	981	11/19/2010 11:50:31 AM	CR2	4204	Normal	70030*XR ORBITS FOR FOREIGN BODY
Bart19	Bell	707	11/19/2010 3:12:03 PM	CR2	1680	Normal	70030*XR ORBITS FOR FOREIGN BODY
Darryl80	Watts	315	11/19/2010 4:21:57 PM	CR2	8385	Normal	70030*XR ORBITS FOR FOREIGN BODY
Jerome5	Hobbs	735	11/19/2010 5:52:27 PM	CR2	352	Normal	70030*XR ORBITS FOR FOREIGN BODY
Calvin7	Nolan	1071	11/19/2010 9:10:29 PM	CR1	4451	Normal	70030*XR ORBITS FOR FOREIGN BODY
Jason	Delgado	456	11/19/2010 9:37:25 PM	CR1	4469	Normal	70030*XR ORBITS FOR FOREIGN BODY

Figure 4.20 – Scheduled Worklist with Group and Personal Views

## 5. Known Limitations

Bugs, Suggested Features, and Support Issues are now tracked in a web based system called Redmine. The following is a snapshot of the issues found in Build 1.05 as of the end of Sprint 6. Note that the majority if these issues will be resolved in Build 1.06.

#	Status	Subject	Category	Found	% Done	Resolved
15	Resolved	Opening a lookup table that is already open causes strange behaviour	Admin Tools	1.05	100	1.06
16	Closed	Adding a blank row to a lookup causes exception	Admin Tools	1.05	100	1.05
17	Closed	Issues with PersonResource and UserDetail lookups	Admin Tools	1.05	100	1.05
18	New	Rows in UserDetail are getting marked as dirty without any updates	Admin Tools	1.05	0	
19	Resolved	Problems adding a new user that is not a person resource	Admin Tools	1.05	100	1.06
20	New	Updates to PersonResource are reflected in database but not GUI	Admin Tools	1.05	0	
21	Resolved	Setting UserGroupPermission access level to None does not function properly	Admin Tools	1.05	100	1.06
22	Closed	Requested By: is misconfigured on the core Order screen	Thick Client GUI	1.05	100	1.05
23	New	Procedure Codes that are marked as Inactive are still included in the Procedure Picker	Thick Client GUI	1.05	0	
24	Resolved	Procedure Picker will not enforce Laterality and Body Part when multiple procedures are specified	Thick Client GUI	1.05	100	1.06
25	Resolved	Procedure Picker does not refresh screen when removing procedures with required fields	Thick Client GUI	1.05	100	1.06
26	Resolved	Procedure Picker should also be able to filter by Procedure Code	Thick Client GUI	1.05	100	1.06
27	Resolved	Changing patients does not re-validate required fields	Thick Client GUI	1.05	100	1.06
28	Resolved	Order Status when editing an order goes directly to Signed 1	Web Services/DB	1.05	100	1.06
29	Resolved	Order Status does not update when scheduling an order	Web Services/DB	1.05	100	1.06
30	New	Issue with filtered worklists and launching screens with context	Thick Client GUI	1.05	0	
31	Resolved	Deleting rows from Audit History in GUI causes exception	Thick Client GUI	1.05	100	1.06
32	New	Some worklist slowness and flashing when updating status in RIS	Thick Client GUI	1.05	0	
33	Resolved	Context Menu on Pending Orders worklist	Thick Client GUI	1.05	100	1.06
34	New	Parent items in worklist context menus should be hidden if they have no child items	Thick Client GUI	1.05	0	
35	Resolved	Exception when saving group worklist view with name that already exists	Thick Client GUI	1.05	100	1.06
36	New	Exception when occurs when worklist views exceed the size of the tool bar	Thick Client GUI	1.05	0	
37	Resolved	The Code column in the SystemConfig lookup table allows duplicate values	Web Services/DB	1.05	100	1.06
39	Resolved	Loosing changes on lookup table if I try to reopen the same lookup table	Admin Tools	1.05	100	1.06