

NICU oromotor database

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Table of contents

1 NICU Database Setup..... 3

2 User manual 4

 2.1 Overview of menu bar options..... 5

 2.2 Add new Patient in NICU database 9

 2.3 Add and modify medical information for existing patient 10

 2.4 Other functions in NICU database..... 14

3 Reference 16

1 NICU Database Setup

NICU Database is coded by Visual Basic 6.0 and SQL (20,469 coding lines). It defines a series of tables that describe patient information like Patient background, Patient experiment trial records, Birth order, Race, Feeding mode, Medication description, ROP stage, Oxymetry history, State control, Ethnicity, Patient type, Delivery type, Neurological exam, Gag reflex, Pacifier size, etc. Please follow the steps shown below to install NICU database:

1. Uninstall any previous installed versions of **NICU Database** using **Control Panel > Add/Remove Programs**.
2. Install **NICU Database** by running setup.exe from the installation package.
3. Copy “nicu.mdb” (MS Access database file) into folder – “C:\Program Files\NICU Database”

Note: Take a backup of MS Access database file “nicu.mdb” periodically. Nicu.mdb contains all the patient data.

2 User manual

To run **NICU Database**, double click on the program icon. The main program window should appear with a menu bar along the top. As shown in Figure 1, the menu bar has five active options including **P**atient, **C**onfiguration, **R**eports, **U**ser, and **H**elp. There are seven options at the bottom of the window program including **V**iew, **A**dd, **M**odify, **D**elete, **S**earch, **S**ort, and **R**efresh as shown in Figure 1.

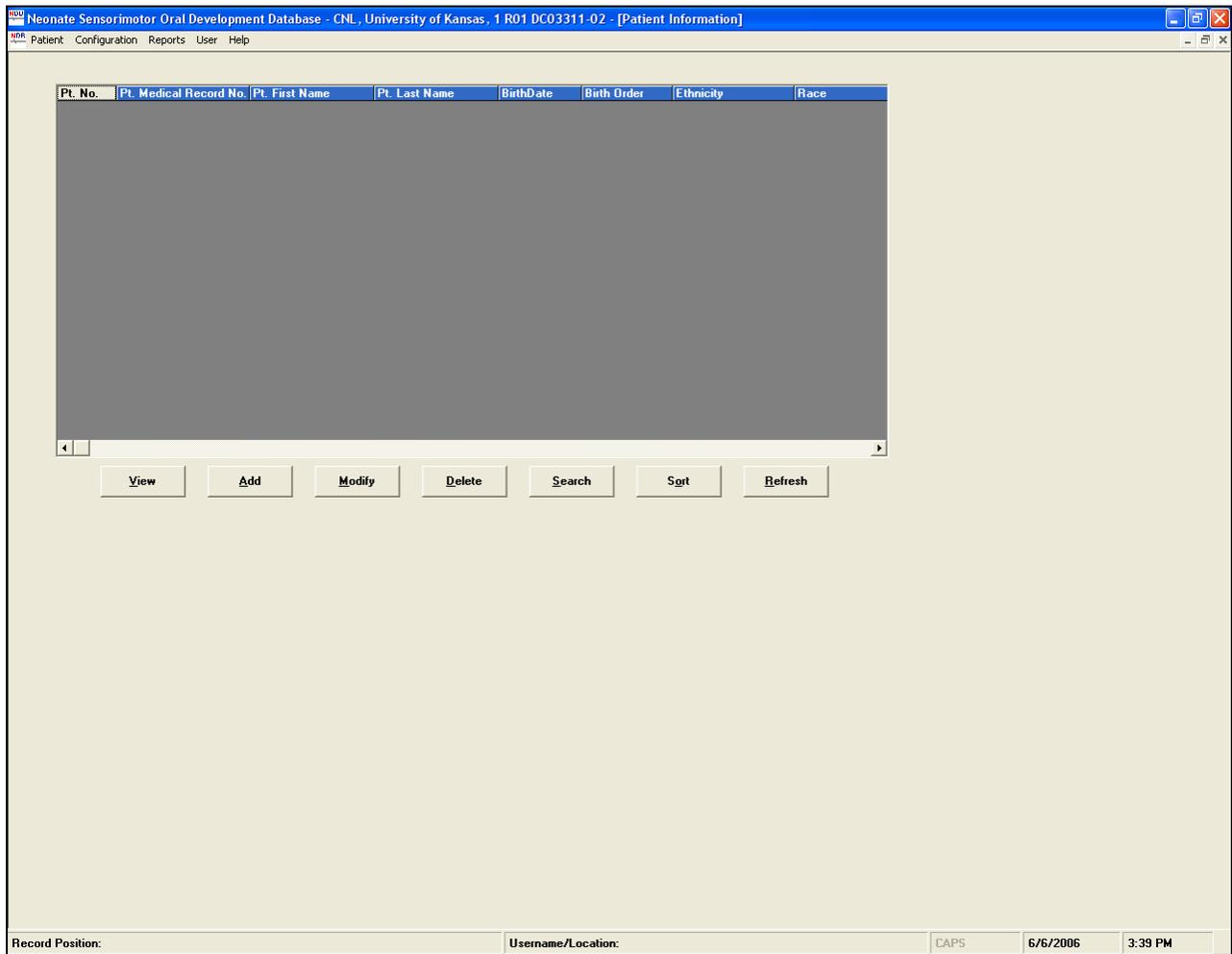


Figure 1. Main program window of the **NICU Database** user interface

2.1 Overview of menu bar options

Selecting the **Patient** allows the user with access to **Patient Info**, **Patient Test Info** submenus (see Figure 2). These two submenus enable user to view, add, and modify pertinent Patient information in two tables with different functionality.

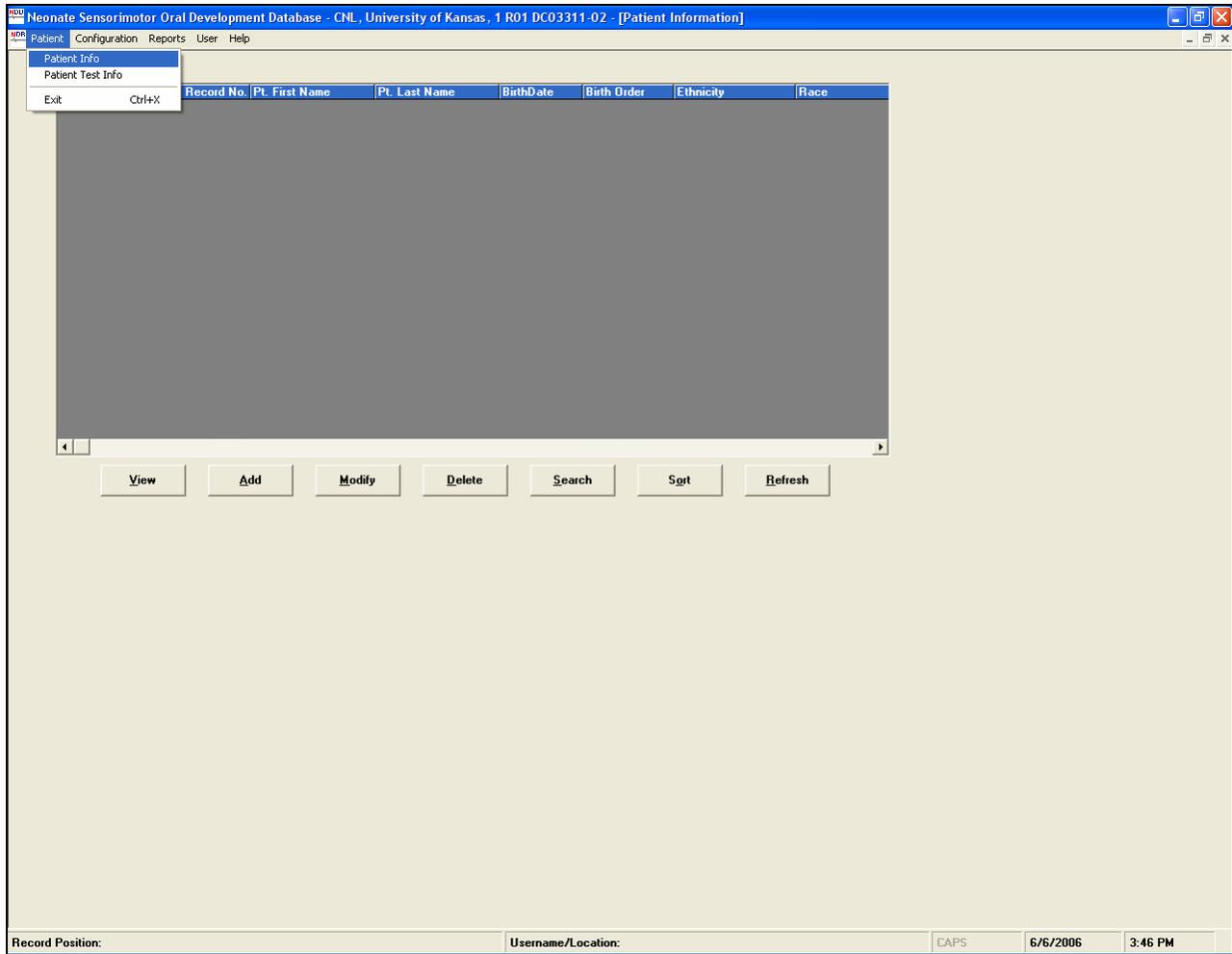


Figure 2. Main program window with the **Patient** menu options list displayed.

The submenu designated as **Configuration** contains **Status Info**, **Birth Order Info**, **Ethnicity Info**, **Race Info**, **Delivery Type**, **Patient Type**, **Feeding Mode Info**, **Medication Info**, **ROP Stage Info**, **Oxymetry Swallow Results Info**, **Oxymetry Swallow Indications Info**, **Neurologic Exam Info**, **Gag Reflex Info**, **State Control Info**, and **Pacifier Size Info** as shown in Figure 3.

Clicking on any of these submenus will enable a new table to popup, which allows the user to change or update the patient's information.

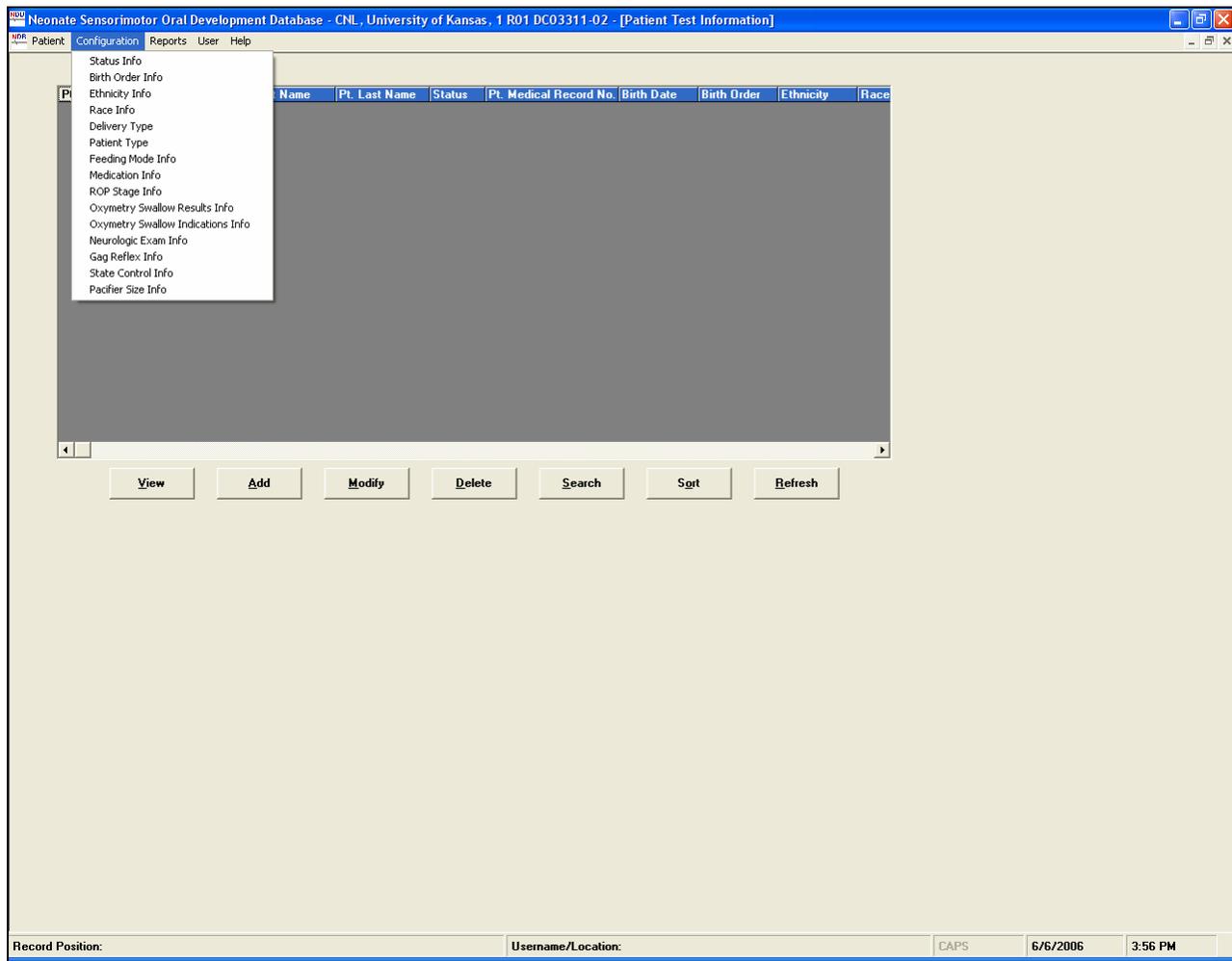


Figure 3. Main program window with the **Configuration** menu options list displayed

The **Reports** menu allows the user to generate a report of the cumulative distribution of patient race and ethnicity in separate files as shown in Figure 4. This is useful for completion of NIH minority/race inclusion reports for annual research progress reports.

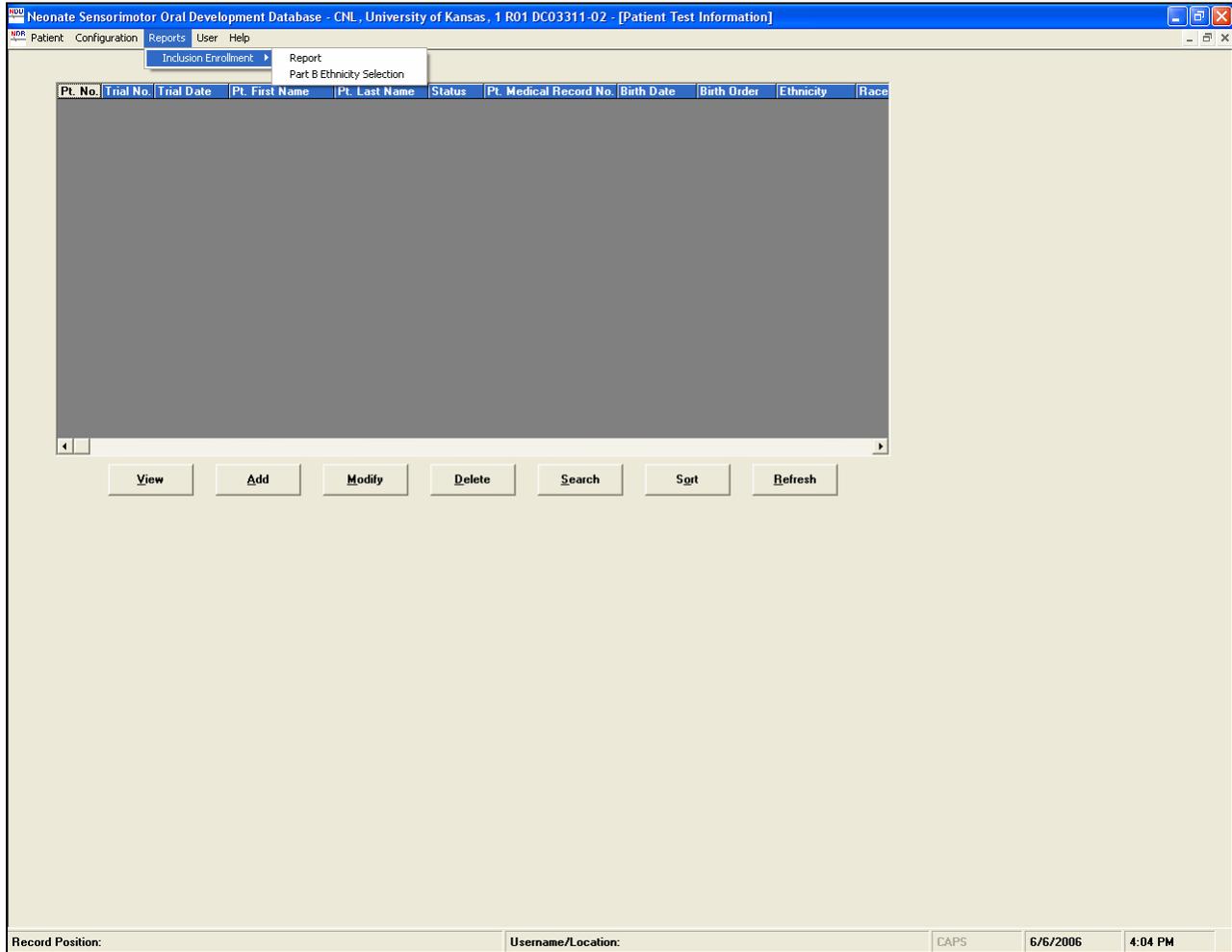


Figure 4. Main program window with the **Reports** menu options list displayed

The User submenu allows users to change the sites of data collections (refer Figure 5).

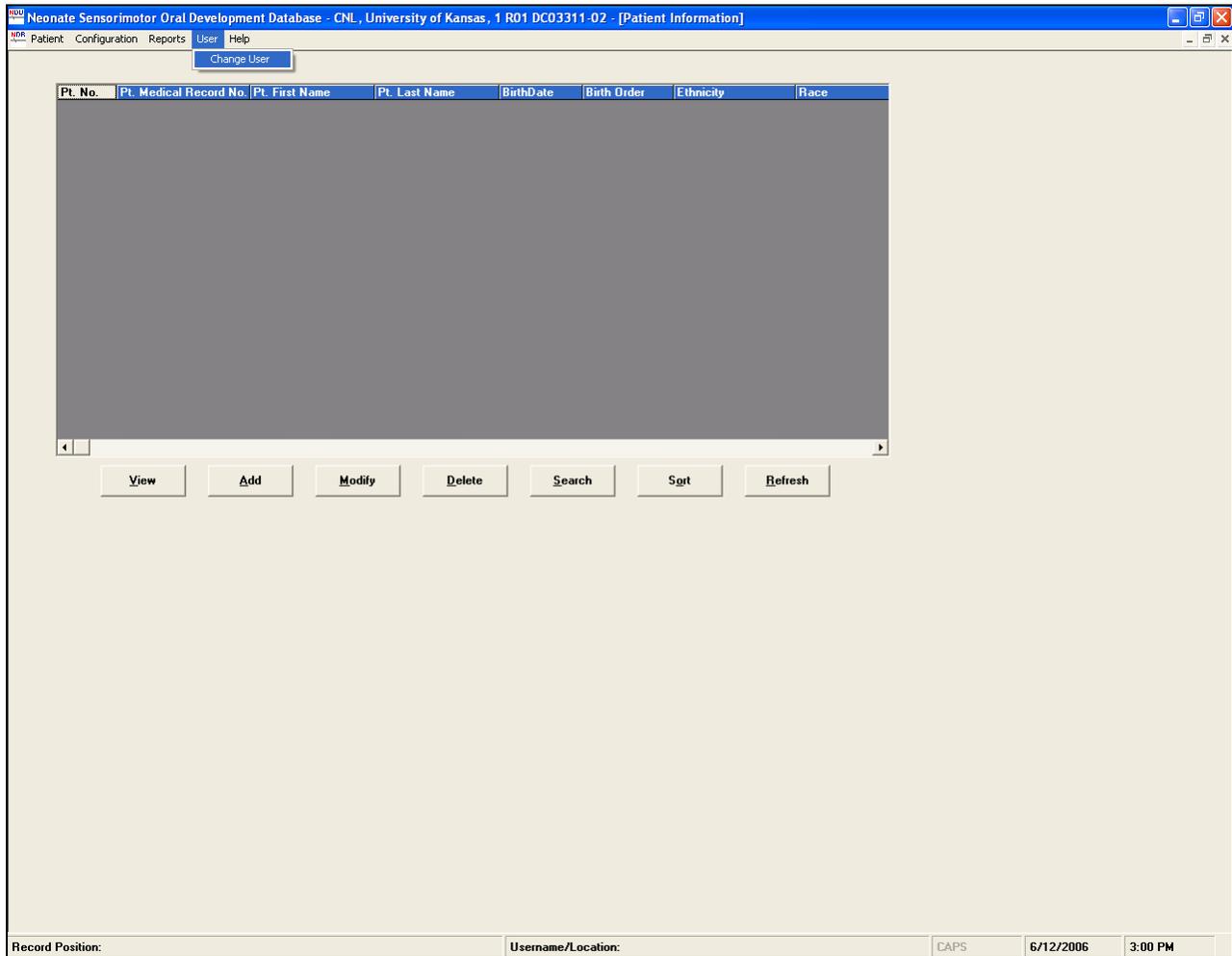


Figure 5. Main program window with the User menu option list displayed

2.2 Add new Patient in NICU database

In order to add new patient information, choose the **Patient** → **Patient Info**, and click the **Add** button (Figure 6). This permits the user to enter Patient information such as **Patient Number**, **Patient Medical Record**, **First Name**, **Last Name**, **Date of Birth**, **Birth Order**, **Ethnicity**, **Race**, **Gender**, **Patient Group**, and **Patient's Discharge Date**. Selecting **Save** will update the patient's information into the **NICU Database**.

The screenshot shows a web application window titled "Neonate Sensorimotor Oral Development Database - CNL, University of Kansas, 1 R01 DC03311-02 - [Patient Info Details]". The window has a menu bar with "Patient", "Configuration", "Reports", "User", and "Help". The main content area is a form with the following fields:

- Pt. No.:
- Pt. Medical Record No.:
- Pt. First Name:
- Pt. Last Name:
- Birth Date:
- BirthOrder:
- Ethnicity:
- Race:
- Gender:
- Patient Type:
- Discharge Date:

On the right side of the form, there is a "Followup Dates" section with a table:

Month	Followup Date

Below the table is a "Comments" section with a large text area.

At the bottom right of the form are "Save" and "Cancel" buttons.

The status bar at the bottom of the window shows: "Record Position:", "Username/Location:", "CAPS", "6/12/2006", and "3:10 PM".

Figure 6. Entering new patient's information

In **Patient** → **Patient Info**, there are some other buttons like **View**, **Modify**, **Delete**, etc. Clicking on those buttons will allow user to make changes for an individual patient in similar window as shown in Figure 6.

2.3 Add and modify medical information for existing patient

After setup and creation of the fundamental data file (outlined in section 2.2) for an individual patient, the **Patient Test Info** table will allow the user to view the patients' information database. The User can add or modify the patient's database by choosing **Modify** icon. This will allow the user to add new information to the patient's database as shown in Figure 7. Note that there are 7 pages tabs located along the top panel to allow the user to modify or add new information into the patient database. These are shown on the following panels.

The screenshot shows a software interface for patient data entry. At the top, there is a menu bar with 'Patient', 'Configuration', 'Reports', 'User', and 'Help'. Below the menu is a tabbed interface with seven tabs labeled 'Page 1' through 'Page 7'. The 'Page 1' tab is active and contains the following fields:

- Pt. No.:** K64 (dropdown)
- Trial No.:** 1 (text)
- Trial Date:** 06-14-2006 (text)
- Pt. First Name:** e (text)
- Pt. Last Name:** Doe (text)
- Pt. Medical Record No.:** 456123 (text)
- Status:** 1 (dropdown) with label 'Initial'
- Birth Date:** 01-26-2006 (text)
- BirthOrder:** 2 (dropdown) with label 'First of twins'
- Ethnicity:** 3 (dropdown) with label 'Unknown'
- Race:** 6 (dropdown) with label 'More than one race'
- Gender:** F (dropdown)
- Patient Type:** Group 1 (dropdown) with label 'TERM'
- Discharge Date:** (empty text)
- Delivery Type:** C (dropdown) with label 'Section'
- Pacifier Size:** M (dropdown) with label 'Medium'

On the right side of the form, there are several measurement and clinical data fields:

- GA at Birth (days):** 0 (text)
- Days of Life at Init Study:** 139 (text)
- GA at Study (days):** 139 (text)
- Birth Weight (gm):** 0 (text)
- Birth Length (cm):** 0 (text)
- Birth Head Circumference (cm):** 0 (text)
- Study Weight (gm):** 0 (text)
- Study Length (cm):** 0 (text)
- Study Head Circumference (cm):** 0 (text)

Below these are two sections for clinical data:

- Apnea in last 72 hours:** Radio buttons for 'Yes' and 'No' (selected).
- Polysomnogram:** Radio buttons for 'Yes' and 'No' (selected 'No'). Includes a 'Date' field and buttons for 'Add', 'Modify', and 'Delete'.
- Oxypneumocardiogram:** Radio buttons for 'Yes' and 'No' (selected 'No'). Includes a 'Date' field and buttons for 'Add', 'Modify', and 'Delete'.

At the bottom of the form are 'Save' and 'Cancel' buttons. The status bar at the very bottom shows: 'Record Position: 1/154', 'Username/Location: kumc', 'CAPS', '6/14/2006', and '3:39 PM'.

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

Comments

Save Cancel

2nd page

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

<p>Intubated <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <table border="1"><thead><tr><th>Date Intubated</th><th>No. of Days</th></tr></thead><tbody><tr><td></td><td></td></tr></tbody></table> <p>Add Modify Delete</p>	Date Intubated	No. of Days			<p>Seizures treated with anticonvulsants <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>EEG <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <table border="1"><thead><tr><th>Date</th></tr></thead><tbody><tr><td></td></tr></tbody></table> <p>Add Modify Delete</p>	Date	
Date Intubated	No. of Days						
Date							
<p>Nasal CPAP <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <table border="1"><thead><tr><th>CPAP Date</th><th>No. of Days</th></tr></thead><tbody><tr><td></td><td></td></tr></tbody></table> <p>Add Modify Delete</p>	CPAP Date	No. of Days			<p>Intraventricular Hemorrhage <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Grade of IVH <input type="text" value="1"/></p>		
CPAP Date	No. of Days						
<p>Nasal Cannula <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <table border="1"><thead><tr><th>Cannula Date</th><th>No. of Days</th></tr></thead><tbody><tr><td></td><td></td></tr></tbody></table> <p>Add Modify Delete</p>	Cannula Date	No. of Days			<p>Cranial Ultrasound <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <table border="1"><thead><tr><th>Date</th></tr></thead><tbody><tr><td>01-29-2004</td></tr></tbody></table> <p>Add Modify Delete</p>	Date	01-29-2004
Cannula Date	No. of Days						
Date							
01-29-2004							
<p>Oxygen <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Days on Oxygen <input type="text" value="0"/></p> <p>Days Since Extub <input type="text" value="0"/></p> <p>Days Since Nasal CPAP <input type="text" value="0"/></p> <p>Days Since Nasal Cannula <input type="text" value="0"/></p>	<p>Ventricular dilatation <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Porencephalic cyst <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Periventricular leukomalacia <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>CT of head <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <table border="1"><thead><tr><th>Date</th></tr></thead><tbody><tr><td></td></tr></tbody></table> <p>Add Modify Delete</p>	Date					
Date							

Save Cancel

3rd page

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

<p>MRI of head <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p> <p>VP Shunt <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Mode of Feeding 5 NG/PO</p> <p>Percent of feeding oral/by volume 12.5</p> <p>Days of oral feedings prior to study 2</p> <p>Breast Milk <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Number of emesis/day in last 72 hours 0</p> <p>Scintiscan <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>GER documented on scintiscan <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Delayed gastric emptying on scintiscan <input type="radio"/> Yes <input checked="" type="radio"/> No</p>	<p>pH probe <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>GER documented on pH probe <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Current Medications <input type="text" value="Medication"/> <input type="button" value="Add"/> <input type="button" value="Delete"/></p> <p>Past Medications <input type="text" value="Medication"/> <input type="button" value="Add"/> <input type="button" value="Delete"/></p> <p>NEC w/pneumotosis or surgery <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p> <p>Blood Culture + Sepsis <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p>
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4th page

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

<p>CSF culture positive meningitis <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p> <p>ROP stage at last exam 1</p> <p>ROP zone at last exam 1</p> <p>ABR <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p> <p>ABR Result Pass</p> <p>Oxymetry Swallow study <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="text" value="Date"/> <input type="button" value="Add"/> <input type="button" value="Modify"/> <input type="button" value="Delete"/></p>	<p>Oxymetry swallow results Pass No Aspiration</p> <p>Indications for Oxymetry swallow 1 Cough or choke with feeding</p> <p>At the time of study</p> <p>Neurologic Exam N Normal</p> <p>Gag reflex N Normal</p> <p>State Control during study 1 Eyes Closed, normal Resp, absent movements</p>
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5th page

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

NEONATAL OROMOTOR ASSESSMENT SCALE

Jaw/N1/Continuous degree jaw depression	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/N1/Rhythm excursions	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/N1/Spontaneous jaw excursions	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/N1/Movements of 1/sec	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/N1/Sufficient closure for expression	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Disorganized/Inconsistent depression	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Disorganized/Arrhythmic	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Disorganized/Difficult initiation	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Disorganized/Immature suck	<input type="radio"/> Yes <input checked="" type="radio"/> No

NEONATAL OROMOTOR ASSESSMENT SCALE

Jaw/Dysfunction/Wide excursion interrupting seal	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Dysfunction/Minimal excursions, clenching	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Dysfunction/Lat. deviation	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Dysfunction/Absence of move	<input type="radio"/> Yes <input checked="" type="radio"/> No
Jaw/Dysfunction/Lack of rate change NNS to NS	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/N1/Cupped	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/N1/Ext-elv-retr. nl	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/N1/Rhythmical	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/N1/Rate of 1/sec	<input type="radio"/> Yes <input checked="" type="radio"/> No

Save Cancel

6th page

Patient Configuration Reports User Help

Page 1 Page 2 Page 3 Page 4 Page 5 Page 6 Page 7

NEONATAL OROMOTOR ASSESSMENT SCALE

Tongue/N1/EfficientSuck	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Disorganized/protrusion	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Disorganized/Arrhythmic	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Disorganized/Unable to sustain 2 min	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Disorganized/incoord suck-swallow-breathe	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Dysfunctional/flattened or flaccid	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Dysfunctional/Retracted	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Dysfunctional/Asymmetrical, lateral deviation	<input type="radio"/> Yes <input checked="" type="radio"/> No

NEONATAL OROMOTOR ASSESSMENT SCALE

Tongue/Dysfunctional/Protrusion with down and out move	<input type="radio"/> Yes <input checked="" type="radio"/> No
Tongue/Dysfunctional/Absence of movement	<input type="radio"/> Yes <input checked="" type="radio"/> No

Save Cancel

7th page

Figure 7 (Page Tabs 1 through 7). Permit the user to enter or modify patient's clinical information

2.4 Other functions in NICU database

In Patient Info table (by clicking Patient→Patient Info), selecting **Search** button will allow the user to search a patient in the database by **Patient Number**, **Medical Record Number**, **Last Name** or **First Name** (refer Figure 8).

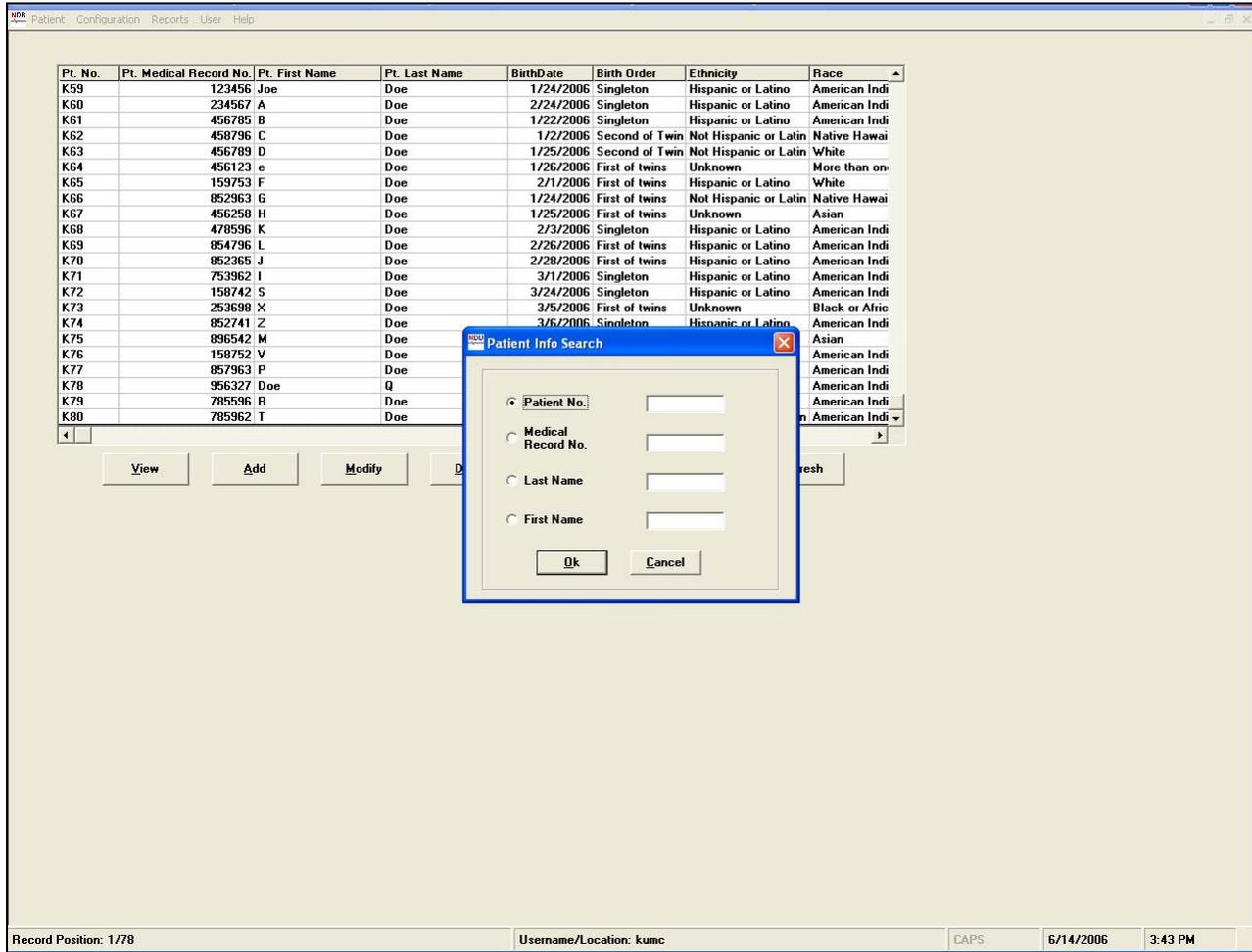


Figure 8. Search in Patient Info

The **S**ort button will also allow the user to sort the patients database by different options such as **P**atient Number, **P**atient Medical Record, **F**irst Name, **L**ast Name, **D**ate of Birth, **B**irth Order, **E**thnicity, **R**ace, or **G**ender (refer Figure 9).

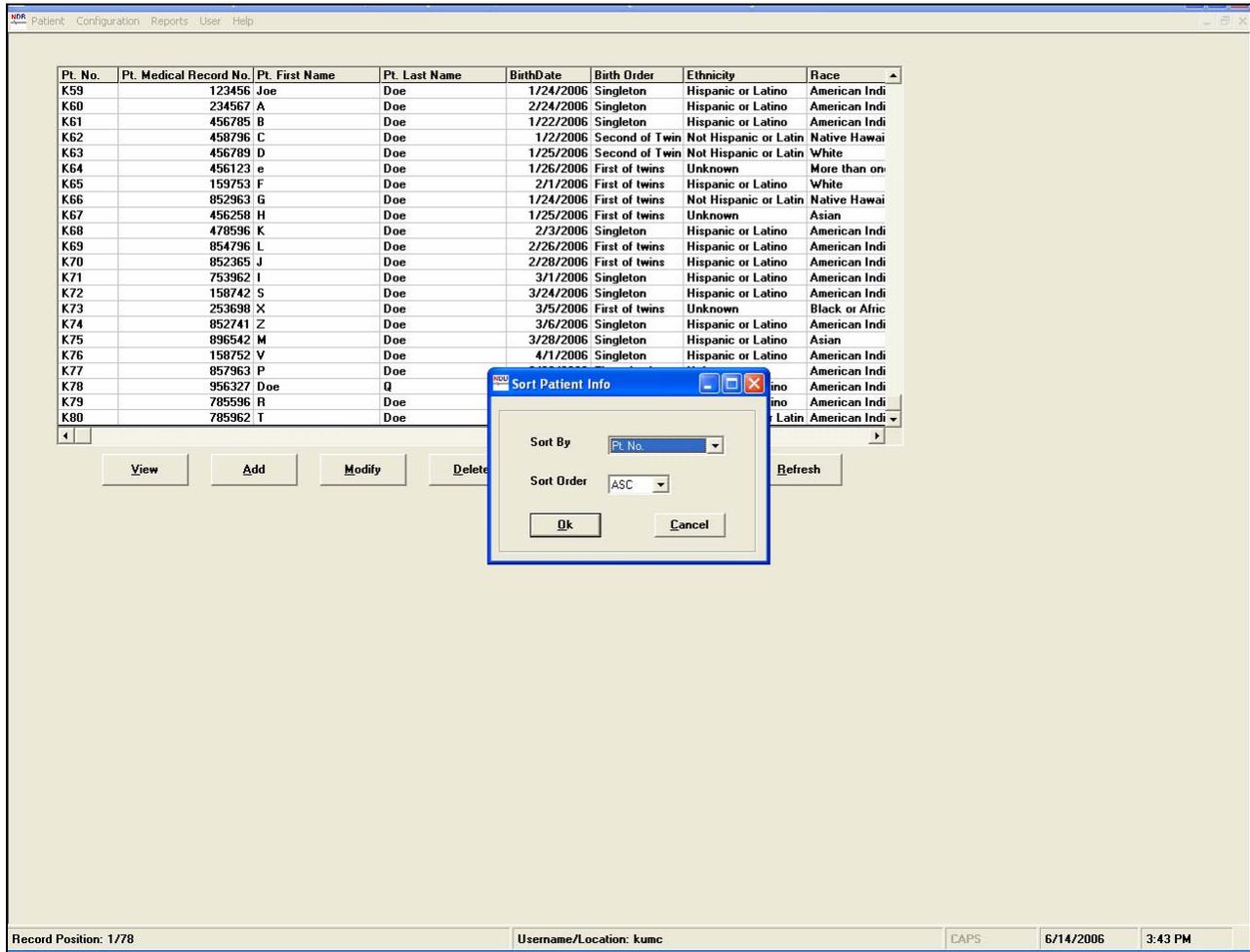


Figure 9. **S**ort Patient Info window is displayed.

3 Reference

NIH R01 DC 03311-05 (SM Barlow – Principal Investigator). Sensorimotor Control and Development of the Human Orofacial System. (\$2,120,000 total costs). 01/15/02 – 12/31/06.